



SEQUENCE LISTING

<110> COOKE, DAVID
DEBET, MARTINE
GIDLEY, MICHAEL, JOHN
JOBBLING, STEPHEN, ALAN
SAFFORD, RICHARD
SIDEBOTTOM, CHRISTOPHER, MICHAEL
WESTCOTT, ROGER, JOHN

<120> IMPROVEMENTS IN OR RELATING TO PLANT STARCH COMPOSITION

<130> 054163-5003-US

<140> 10/056,454
<141> 2002-01-24

<150> PCT/GB96/01075
<151> 1996-05-03

<150> GB 9607409.1
<151> 1996-04-10

<150> GB 9509229.2
<151> 1995-05-05

<160> 43

<170> PatentIn version 3.2

<210> 1
<211> 57
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 1
aaggatccgt cgacatcgat aatacgactc actataggga tttttttttt tttttttt 57

<210> 2
<211> 17
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 2
aaggatccgt cgacatc 17

<210> 3
<211> 17
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 3
gacatcgata atacgac 17

<210> 4
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 4
catccaacca ccatctcgca 20

<210> 5
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 5
ttgagagaag atacctaagt 20

<210> 6
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 6
atgttcagtc catctaaagt 20

<210> 7
 <211> 20
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 7
 agaacaacaa ttcctagctc 20

<210> 8
 <211> 20
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 8
 ggggccttga actcagcaat 20

<210> 9
 <211> 20
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 9
 cgtcccagca ttcgacataa 20

<210> 10
 <211> 26
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 10
 cttggatcct tgaactcagc aatttg 26

<210> 11
 <211> 29
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 11
 taactcgagc aacgcgatca caagttcgt

29

<210> 12
 <211> 3003
 <212> DNA
 <213> Solanum tuberosum

<400> 12
 gatggggcct tgaactcagc aatttgacac tcagttagtt acactgccat cacttatcag 60
 atctctatTTt tttctcttaa ttccaaccaa ggaatgaata aaaagataga tttgtaaaaa 120
 ccctaaggag agaagaagaa agatgggtgta tacactctct ggagttcgtt ttcctactgt 180
 tccatcagtg taaaaatcta atggattcag cagtaatggg gatcggagga atgctaatat 240
 ttctgtattc ttgaaaaaac actctctttc acggaagatc ttggctgaaa agtcttctta 300
 caattccgaa tcccgacctt ctacaattgc agcatcgggg aaagtccttg tgcctggaat 360
 ccagagtgat agctcctcat cctcaacaga tcaatttgag ttcgctgaga catctccaga 420
 aaattcccca gcatcaactg atgtagatag ttcaacaatg gaacacgcta gccagattaa 480
 aactgagaac gatgacgttg agccgtcaag tgatcttaca ggaagtgttg aagagctgga 540
 ttttgcttca tcactacaac tacaagaagg tggtaaactg gaggagtcta aaacattaaa 600
 tacttctgaa gagacaatta ttgatgaatc tgataggatc agagagaggg gcatccctcc 660
 acctggactt ggtcagaaga tttatgaaat agacccctt ttgacaaact atcgtcaaca 720
 ccttgattac aggtattcac agtacaagaa actgagggag gcaattgaca agtatgaggg 780
 tgggttgga gctttttctc gtgggtatga aagaatgggt ttcactcgtg gtgctacagg 840
 tatcacttac cgtgagtggg ctcttggtgc ccagtcagct gccctcattg gggatttcaa 900
 caattgggac gcaaatgctg actttatgac tcggaatgaa tttggtgtct gagagatttt 960
 tctgccaaat aatgtggatg gttctcctgc aattcctcat ggggccagag tgaagatacg 1020
 tatggacact ccatcaggtg ttaaggattc cattcctgct tggatcaact actctttaca 1080
 gcttctgat gaaattccat ataattggaat atattatgat ccacccgaag aggagaggta 1140
 tatcttccaa caccacggc caaagaaacc aaagtcggtg agaatatatg aatctcatat 1200
 tggaatgagt agtccggagc ctaaaattaa ctcatacgtg aatttttagag atgaagttct 1260
 tcctcgcata aaaaaagctt gggtagaatg cgggtgcaaat tatggctatt caagagcatt 1320
 cttattatgc tagttttggg tatcatgtca caaatttttt tgcaccaagc agccgttttg 1380
 gaacgcccga cgaccttaag tctttgattg ataaagctca tgagctagga attgtgtgtc 1440
 tcatggacat tggtcacagc catgcatcaa ataatacttt agatggactg aacatgtttg 1500
 acggcacaga tagttgttac tttcactctg gagctcgtgg ttatcattgg atgtgggatt 1560
 tccgcctctt taactatgga aactgggagg tacttaggta tcttctctca aatgcgagat 1620
 ggtggttgga tgagttcaaa tttgatggat ttagattcga tgggtgtgaca tcaatgatgt 1680
 gtactcacca cggattatcg gtgggattca ctgggaacta cgaggaatac tttggactcg 1740
 caactgatgt ggatgctgtt gtgtatctga tgctggtcaa cgatcttatt catgggcttt 1800
 tcccagatgc aattaccatt ggtgaagatg ttagecgaat gccgacattt tgtgttcccg 1860
 ttcaagatgg ggtgtgtggc tttgactatc ggctgcatat ggcaattgct gataaatgga 1920
 ttgagttgct caagaaacgg gatgaggatt ggagagtggg tgatattgtt catacactga 1980
 caaatagaag atggtcggaa aagtgtgttt catacgtcga aagtcatgat caagctctag 2040
 tcggtgataa aactatagca ttctggctga tggacaagga tatgtatgat tttatggctc 2100

| | | | | | | |
|------------|------------|------------|------------|-------------|-------------|------|
| tgatagacc | gtcaacatca | ttaatagatc | gtgggatagc | attacacaag | atgattaggc | 2160 |
| ttgtaactat | gggattagga | ggagaaggg | acctaaat | catgggaaat | gaattcggcc | 2220 |
| accctgagtg | gattgatttc | cctagggctg | aacaacacct | ctctgatggc | tcagtaattc | 2280 |
| ccagaaacca | attcagttat | gataaatgca | gacggagatt | tgacctggga | gatgcagaat | 2340 |
| atttaagata | ccgtgggttg | caagaatttg | accgggctat | gcagtatctt | gaagataaat | 2400 |
| atgagtttat | gacttcagaa | caccagttca | tatcacgaaa | ggatgaagga | gataggatga | 2460 |
| ttgtatttga | aaaaggaaac | ctagtttttg | tctttaat | tactggaca | aaaggctatt | 2520 |
| cagactatcg | cataggctgc | ctgaagcctg | gaaaatacaa | ggttgccctg | gactcagatg | 2580 |
| atccactttt | tggtggcttc | gggagaattg | atcataatgc | cgaatatttc | acctttgaag | 2640 |
| gatggtatga | tgatcgtcct | cggtcaatta | tggtgatatg | acctagtaga | acagcagtgg | 2700 |
| tctatgcact | agtagacaaa | gaagaagaag | aagaagaaga | agtagcagta | gtagaagaag | 2760 |
| tagtagtaga | agaagaatga | acgaacttgt | gatcgcgctg | aaagatttga | acgccacata | 2820 |
| gagcttcttg | acgtatctgg | caatattgca | ttagtcttgg | cggaaatttca | tgtgacaaca | 2880 |
| ggtttgcaat | tctttccact | attagtagtg | caacgatata | cgcagagatg | aagtgtctgaa | 2940 |
| caaaaacata | tgtaaaatcg | atgaatttat | gtcgaatgct | gggacgatcg | aattcctgca | 3000 |
| gcc | | | | | | 3003 |

<210> 13

<211> 2975

<212> DNA

<213> Solanum tuberosum

<400> 13

| | | | | | | |
|-------------|------------|-------------|-------------|-------------|-------------|------|
| ttgatgggccc | ttgaactcag | caatttgaca | ctcagttagt | tacactccta | tcacttatca | 60 |
| gatctctatt | ttttctctta | attccaacca | ggggaatgaa | taaaaggata | gatttgtaaa | 120 |
| aaccctaagg | agagaagaag | aaagatgggtg | tatatactct | ctggagttcg | ttttcctact | 180 |
| gttccatcag | tgtacaaatc | taatggattc | agcagtaatg | gtgatcggag | gaatgctaata | 240 |
| gtttctgtat | tcttgaaaaa | gcactctctt | tcacggaaga | tcttggctga | aaagtcttct | 300 |
| tacaattccg | aattccgacc | ttctacagtt | gcagcatcgg | ggaaagtcc | tgtgcctgga | 360 |
| accagagtg | atagctcctc | atcctcaaca | gaccaatttg | agttcactga | gacatctcca | 420 |
| gaaaattccc | cagcatcaac | tgatgtagat | agttcaacaa | tggaacacgc | tagccagatt | 480 |
| aaaactgaga | acgatgacgt | tgagccgtca | agtgatctta | caggaaagtgt | tgaagagctg | 540 |
| gattttgctt | catcactaca | actacaagaa | gggtggtaaac | tggaggagtc | taaaacatta | 600 |
| aatacttctg | aagagacaat | tattgatgaa | tctgatagga | tcagagagag | gggcatccct | 660 |
| ccacctggac | ttggtcagaa | gatttatgaa | atagaccccc | ttttgacaaa | ctatcgtcaa | 720 |
| caccttgatt | acaggtattc | acagtacaag | aaactgaggg | aggcaattga | caagtagag | 780 |
| gggtggttgg | aagcttttct | cggtggttatg | aaaaaatggg | tttctactcg | agtgtacag | 840 |
| gtatcactta | ccgtgagtg | gctcctgggtg | cccagtcagc | tgccctcatt | ggagatttca | 900 |
| acaattggga | cgcaaatgct | gacattatga | ctcggaatga | atttggtgtc | tgggagattt | 960 |
| ttctgccaaa | taatgtggat | ggttctcctg | caattctctca | tgggtccaga | gtgaagatac | 1020 |
| gtatggacac | tccatcaggt | gttaaggatt | ccattctctgc | ttggatcaac | tactctttac | 1080 |
| agcttcctga | tgaatttcca | tataatggaa | tatattatga | tccacccgaa | gaggagaggt | 1140 |
| atatcttcca | acaccacgg | caaagaaaac | caaagtcgct | gagaatatat | gaatctcata | 1200 |
| ttggaatgag | tagtccggag | cctaaaatta | actcatacgt | gaatttttaga | gatgaagttc | 1260 |
| ttcctcgcac | aaaaaagctt | gggtacaatg | cgtgcgaat | tatggctatt | caagagcatt | 1320 |
| cttattatgc | tagtttttgt | tatcatgtca | caaatTTTTT | tgcaccaagc | agccgttttg | 1380 |
| gaacgcccga | cgaccttaag | tcttcgattg | ataaagctca | tgagctagga | attgttggtc | 1440 |
| tcattggacat | cgttcacagc | catgcatcaa | ataatacttt | agatggactg | aacatgtttg | 1500 |
| acggcaccga | tagttgttac | tttctactctg | gagctcgtgg | ttatcattgg | atgtgggatt | 1560 |
| ccgcctcttt | aactatggaa | actgggaggt | acttaggtat | cttctctcaa | atgcgagatg | 1620 |
| gtgggttgat | gagttcaa | ttgatggatt | tagattcogat | ggtgtgacat | caatgatgta | 1680 |
| tactcaccac | ggattatcgg | tgggattcac | tgggaactac | gaggaatact | ttggactcgc | 1740 |
| aactgatgtg | gatgctgttg | tgtatctgat | gctggtcaac | gatcttattc | ataggctttt | 1800 |

```

cccagatgca attaccattg gtgaagatgt tagcggaatg ccgacatttt gtattcccgt 1860
tcaagatggg ggtggtggct ttgactatcg gctgcatatg gcaattgctg ataaatggat 1920
tgagttgctc aagaaacggg atgaggattg gagagtgggt gatattgttc atacactgac 1980
aaatagaaga tggtcggaaa agtgtgtttc atacgctgaa agtcatgac aagctctagt 2040
cggtgataaa actatagcat tctggctgat ggacaaggat atgtatgatt ttatggctct 2100
ggatagaccg ccaacatcat taatagatcg tgggatagca ttgcacaaga tgattaggct 2160
tgtaactatg ggattaggag gagaagggtta cctaaatttc atgggaaatg aattcggcca 2220
ccctgagtgg attgatttcc ctagggttga gccacacctt tctgatggct cagtaattcc 2280
cggaaaccaa ttcagttatg ataaatgcag acggagattt gacctgggag atgcagaata 2340
tttaagatac catgggttac aagaatttga ctgggctatg cagtatcttg aagataaata 2400
tgagtttatg acttcagaac accagttcat atcacgaaag gatgaaggag ataggatgat 2460
tgtatttgaa agaggaaacc tagttttcgt ctttaatttt cactggacaa atagctattc 2520
agactatcgc ataggctgcc tgaagcctgg aaaatacaag gttgtcttgg actcagatga 2580
tccacttttt ggtggcttcg ggagaattga tcataatgcc gaatatttca cctctgaagg 2640
atcgtatgat gatcgtcctt gttcaattat ggtgtatgca cctagtagaa cagcagtggg 2700
ctatgcacta gtagacaaac tagaagtagc agtagtagaa gaacccattg aagaatgaac 2760
gaacttgtga tcgcgttgaa agatttgaac gttacttggg catccacata gagcttcttg 2820
acatcagtct tggcggaatt gcatgtgaca acaaggtttg cagttctttc cactattagt 2880
agtccaccga tatacgcaga gatgaagtgc tgaacaaaca tatgtaaaat cgatgaattt 2940
atgtcgaatg ctgggacgat cgaattcctg cagcc 2975

```

```

<210> 14
<211> 3033
<212> DNA
<213> Solanum tuberosum

```

```

<220>
<221> CDS
<222> (96)..(116)

```

```

<220>
<221> CDS
<222> (145)..(2790)

```

```

<400> 14
ttgatggggc cttgaactca gcaatttgac actcagttag ttacactcct atcacttate 60

```

```

agatctctat tttttctctt aattccaacc aagga atg aat aaa agg ata gat 113
                        Met Asn Lys Arg Ile Asp
                        1                      5

```

```

ttg taaaaaccct aaggagagaa gaagaaag atg gtg tat aca ctc tct gga 165
Leu                        Met Val Tyr Thr Leu Ser Gly
                        10

```

```

gtt cgt ttt cct act gtt cca tca gtg tac aaa tct aat gga ttc agc 213
Val Arg Phe Pro Thr Val Pro Ser Val Tyr Lys Ser Asn Gly Phe Ser
15                      20                      25                      30

```

```

agt aat ggt gat cgg agg aat gct aat gtt tct gta ttc ttg aaa aag 261
Ser Asn Gly Asp Arg Arg Asn Ala Asn Val Ser Val Phe Leu Lys Lys
35                      40                      45

```

| | |
|---|-----|
| cac tct ctt tca cgg aag atc ttg gct gaa aag tct tct tac aat tcc | 309 |
| His Ser Leu Ser Arg Lys Ile Leu Ala Glu Lys Ser Ser Tyr Asn Ser | |
| 50 55 60 | |
| gaa ttc cga cct tct aca gtt gca gca tcg ggg aaa gtc ctt gtg cct | 357 |
| Glu Phe Arg Pro Ser Thr Val Ala Ala Ser Gly Lys Val Leu Val Pro | |
| 65 70 75 | |
| gga acc cag agt gat agc tcc tca tcc tca aca gac caa ttt gag ttc | 405 |
| Gly Thr Gln Ser Asp Ser Ser Ser Ser Thr Asp Gln Phe Glu Phe | |
| 80 85 90 | |
| act gag aca tct cca gaa aat tcc cca gca tca act gat gta gat agt | 453 |
| Thr Glu Thr Ser Pro Glu Asn Ser Pro Ala Ser Thr Asp Val Asp Ser | |
| 95 100 105 110 | |
| tca aca atg gaa cac gct agc cag att aaa act gag aac gat gac gtt | 501 |
| Ser Thr Met Glu His Ala Ser Gln Ile Lys Thr Glu Asn Asp Asp Val | |
| 115 120 125 | |
| gag ccg tca agt gat ctt aca gga agt gtt gaa gag ctg gat ttt gct | 549 |
| Glu Pro Ser Ser Asp Leu Thr Gly Ser Val Glu Glu Leu Asp Phe Ala | |
| 130 135 140 | |
| tca tca cta caa cta caa gaa ggt ggt aaa ctg gag gag tct aaa aca | 597 |
| Ser Ser Leu Gln Leu Gln Glu Gly Gly Lys Leu Glu Glu Ser Lys Thr | |
| 145 150 155 | |
| tta aat act tct gaa gag aca att att gat gaa tct gat agg atc aga | 645 |
| Leu Asn Thr Ser Glu Glu Thr Ile Ile Asp Glu Ser Asp Arg Ile Arg | |
| 160 165 170 | |
| gag agg ggc atc cct cca cct gga ctt ggt cag aag att tat gaa ata | 693 |
| Glu Arg Gly Ile Pro Pro Pro Gly Leu Gly Gln Lys Ile Tyr Glu Ile | |
| 175 180 185 190 | |
| gac ccc ctt ttg aca aac tat cgt caa cac ctt gat tac agg tat tca | 741 |
| Asp Pro Leu Leu Thr Asn Tyr Arg Gln His Leu Asp Tyr Arg Tyr Ser | |
| 195 200 205 | |
| cag tac aag aaa ctg agg gag gca att gac aag tat gag ggt ggt ttg | 789 |
| Gln Tyr Lys Lys Leu Arg Glu Ala Ile Asp Lys Tyr Glu Gly Gly Leu | |
| 210 215 220 | |
| gaa gcc ttt tct cgt ggt tat gaa aaa atg ggt ttc act cgt agt gct | 837 |
| Glu Ala Phe Ser Arg Gly Tyr Glu Lys Met Gly Phe Thr Arg Ser Ala | |
| 225 230 235 | |
| aca ggt atc act tac cgt gag tgg gct ctt ggt gcc cag tca gct gcc | 885 |
| Thr Gly Ile Thr Tyr Arg Glu Trp Ala Leu Gly Ala Gln Ser Ala Ala | |
| 240 245 250 | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| ctc | att | gga | gat | ttc | aac | aat | tgg | gac | gca | aat | gct | gac | att | atg | act | 933 |
| Leu | Ile | Gly | Asp | Phe | Asn | Asn | Trp | Asp | Ala | Asn | Ala | Asp | Ile | Met | Thr | |
| 255 | | | | 260 | | | | 265 | | | | 270 | | | | |
| cgg | aat | gaa | ttt | ggg | gtc | tgg | gag | att | ttt | ctg | cca | aat | aat | gtg | gat | 981 |
| Arg | Asn | Glu | Phe | Gly | Val | Trp | Glu | Ile | Phe | Leu | Pro | Asn | Asn | Val | Asp | |
| 275 | | | | 280 | | | | 285 | | | | | | | | |
| ggg | tct | cct | gca | att | cct | cat | ggg | tcc | aga | gtg | aag | ata | cgt | atg | gac | 1029 |
| Gly | Ser | Pro | Ala | Ile | Pro | His | Gly | Ser | Arg | Val | Lys | Ile | Arg | Met | Asp | |
| 290 | | | | 295 | | | | 300 | | | | | | | | |
| act | cca | tca | ggg | gtt | aag | gat | tcc | att | cct | gct | tgg | atc | aac | tac | tct | 1077 |
| Thr | Pro | Ser | Gly | Val | Lys | Asp | Ser | Ile | Pro | Ala | Trp | Ile | Asn | Tyr | Ser | |
| 305 | | | | 310 | | | | 315 | | | | | | | | |
| tta | cag | ctt | cct | gat | gaa | att | cca | tat | aat | gga | ata | cat | tat | gat | cca | 1125 |
| Leu | Gln | Leu | Pro | Asp | Glu | Ile | Pro | Tyr | Asn | Gly | Ile | His | Tyr | Asp | Pro | |
| 320 | | | | 325 | | | | 330 | | | | | | | | |
| ccc | gaa | gag | gag | agg | tat | atc | ttc | caa | cac | cca | cgg | cca | aag | aaa | cca | 1173 |
| Pro | Glu | Glu | Glu | Arg | Tyr | Ile | Phe | Gln | His | Pro | Arg | Pro | Lys | Lys | Pro | |
| 335 | | | | 340 | | | | 345 | | | | 350 | | | | |
| aag | tcg | ctg | aga | ata | tat | gaa | tct | cat | att | gga | atg | agt | agt | ccg | gag | 1221 |
| Lys | Ser | Leu | Arg | Ile | Tyr | Glu | Ser | His | Ile | Gly | Met | Ser | Ser | Pro | Glu | |
| 355 | | | | 360 | | | | 365 | | | | | | | | |
| cct | aaa | att | aac | tca | tac | gtg | aat | ttt | aga | gat | gaa | gtt | ctt | cct | cgc | 1269 |
| Pro | Lys | Ile | Asn | Ser | Tyr | Val | Asn | Phe | Arg | Asp | Glu | Val | Leu | Pro | Arg | |
| 370 | | | | 375 | | | | 380 | | | | | | | | |
| ata | aaa | aag | ctt | ggg | tac | aat | gcg | ctg | caa | att | atg | gct | att | caa | gag | 1317 |
| Ile | Lys | Lys | Leu | Gly | Tyr | Asn | Ala | Leu | Gln | Ile | Met | Ala | Ile | Gln | Glu | |
| 385 | | | | 390 | | | | 395 | | | | | | | | |
| cat | tct | tat | tac | gct | agt | ttt | ggg | tat | cat | gtc | aca | aat | ttt | ttt | gca | 1365 |
| His | Ser | Tyr | Tyr | Ala | Ser | Phe | Gly | Tyr | His | Val | Thr | Asn | Phe | Phe | Ala | |
| 400 | | | | 405 | | | | 410 | | | | | | | | |
| cca | agc | agc | cgt | ttt | gga | acg | ccc | gac | gac | ctt | aag | tct | ttg | att | gat | 1413 |
| Pro | Ser | Ser | Arg | Phe | Gly | Thr | Pro | Asp | Asp | Leu | Lys | Ser | Leu | Ile | Asp | |
| 415 | | | | 420 | | | | 425 | | | | 430 | | | | |
| aaa | gct | cat | gag | cta | gga | att | gtt | gtt | ctc | atg | gac | att | gtt | cac | agc | 1461 |
| Lys | Ala | His | Glu | Leu | Gly | Ile | Val | Val | Leu | Met | Asp | Ile | Val | His | Ser | |
| 435 | | | | 440 | | | | 445 | | | | 450 | | | | |
| cat | gca | tca | aat | aat | act | tta | gat | gga | ctg | aac | atg | ttt | gac | tgc | acc | 1509 |
| His | Ala | Ser | Asn | Asn | Thr | Leu | Asp | Gly | Leu | Asn | Met | Phe | Asp | Cys | Thr | |
| 450 | | | | 455 | | | | 460 | | | | | | | | |

| | |
|---|------|
| gat agt tgt tac ttt cac tct gga gct cgt ggt tat cat tgg atg tgg | 1557 |
| Asp Ser Cys Tyr Phe His Ser Gly Ala Arg Gly Tyr His Trp Met Trp | |
| 465 470 475 | |
| gat tcc cgc ctc ttt aac tat gga aac tgg gag gta ctt agg tat ctt | 1605 |
| Asp Ser Arg Leu Phe Asn Tyr Gly Asn Trp Glu Val Leu Arg Tyr Leu | |
| 480 485 490 | |
| ctc tca aat gcg aga tgg tgg ttg gat gcg ttc aaa ttt gat gga ttt | 1653 |
| Leu Ser Asn Ala Arg Trp Trp Leu Asp Ala Phe Lys Phe Asp Gly Phe | |
| 495 500 505 510 | |
| aga ttt gat ggt gtg aca tca atg atg tat att cac cac gga tta tcg | 1701 |
| Arg Phe Asp Gly Val Thr Ser Met Met Tyr Ile His His Gly Leu Ser | |
| 515 520 525 | |
| gtg gga ttc act ggg aac tac gag gaa tac ttt gga ctc gca act gat | 1749 |
| Val Gly Phe Thr Gly Asn Tyr Glu Glu Tyr Phe Gly Leu Ala Thr Asp | |
| 530 535 540 | |
| gtg gat gct gtt gtg tat ctg atg ctg gtc aac gat ctt att cat ggg | 1797 |
| Val Asp Ala Val Val Tyr Leu Met Leu Val Asn Asp Leu Ile His Gly | |
| 545 550 555 | |
| ctt ttc cca gat gca att acc att ggt gaa gat gtt agc gga atg ccg | 1845 |
| Leu Phe Pro Asp Ala Ile Thr Ile Gly Glu Asp Val Ser Gly Met Pro | |
| 560 565 570 | |
| aca ttt tgt att ccc gtc caa gag ggg ggt gtt ggc ttt gac tat cgg | 1893 |
| Thr Phe Cys Ile Pro Val Gln Glu Gly Gly Val Gly Phe Asp Tyr Arg | |
| 575 580 585 590 | |
| ctg cat atg gca att gct gat aaa cgg att gag ttg ctc aag aaa cgg | 1941 |
| Leu His Met Ala Ile Ala Asp Lys Arg Ile Glu Leu Leu Lys Lys Arg | |
| 595 600 605 | |
| gat gag gat tgg aga gtg ggt gat att gtt cat aca ctg aca aat aga | 1989 |
| Asp Glu Asp Trp Arg Val Gly Asp Ile Val His Thr Leu Thr Asn Arg | |
| 610 615 620 | |
| aga tgg tcg gaa aag tgt gtt tca tac gct gaa agt cat gat caa gct | 2037 |
| Arg Trp Ser Glu Lys Cys Val Ser Tyr Ala Glu Ser His Asp Gln Ala | |
| 625 630 635 | |
| cta gtc ggt gat aaa act ata gca ttc tgg ctg atg gac aag gat atg | 2085 |
| Leu Val Gly Asp Lys Thr Ile Ala Phe Trp Leu Met Asp Lys Asp Met | |
| 640 645 650 | |
| tat gat ttt atg gct ctg gat aga ccg tca aca tca tta ata gat cgt | 2133 |
| Tyr Asp Phe Met Ala Leu Asp Arg Pro Ser Thr Ser Leu Ile Asp Arg | |
| 655 660 665 670 | |

| | |
|---|------|
| ggg ata gca ttg cac aag atg att agg ctt gta act atg gga tta gga Gly Ile Ala Leu His Lys Met Ile Arg Leu Val Thr Met Gly Leu Gly 675 680 685 | 2181 |
| gga gaa ggg tac cta aat ttc atg gga aat gaa ttc ggc cac cct gag Gly Glu Gly Tyr Leu Asn Phe Met Gly Asn Glu Phe Gly His Pro Glu 690 695 700 | 2229 |
| tgg att gat ttc cct agg gct gaa caa cac ctc tct gat ggc tca gta Trp Ile Asp Phe Pro Arg Ala Glu Gln His Leu Ser Asp Gly Ser Val 705 710 715 | 2277 |
| atc ccc gga aac caa ttc agt tat gat aaa tgc aga cgg aga ttt gac Ile Pro Gly Asn Gln Phe Ser Tyr Asp Lys Cys Arg Arg Arg Phe Asp 720 725 730 | 2325 |
| ctg gga gat gca gaa tat tta aga tac cgt ggg ttg caa gaa ttt gac Leu Gly Asp Ala Glu Tyr Leu Arg Tyr Arg Gly Leu Gln Glu Phe Asp 735 740 745 750 | 2373 |
| cgg cct atg cag tat ctt gaa gat aaa tat gag ttt atg act tca gaa Arg Pro Met Gln Tyr Leu Glu Asp Lys Tyr Glu Phe Met Thr Ser Glu 755 760 765 | 2421 |
| cac cag ttc ata tca cga aag gat gaa gga gat agg atg att gta ttt His Gln Phe Ile Ser Arg Lys Asp Glu Gly Asp Arg Met Ile Val Phe 770 775 780 | 2469 |
| gaa aaa gga aac cta gtt ttt gtc ttt aat ttt cac tgg aca aaa agc Glu Lys Gly Asn Leu Val Phe Val Phe Asn Phe His Trp Thr Lys Ser 785 790 795 | 2517 |
| tat tca gac tat cgc ata gcc tgc ctg aag cct gga aaa tac aag gtt Tyr Ser Asp Tyr Arg Ile Ala Cys Leu Lys Pro Gly Lys Tyr Lys Val 800 805 810 | 2565 |
| gcc ttg gac tca gat gat cca ctt ttt ggt ggc ttc ggg aga att gat Ala Leu Asp Ser Asp Asp Pro Leu Phe Gly Gly Phe Gly Arg Ile Asp 815 820 825 830 | 2613 |
| cat aat gcc gaa tat ttc acc ttt gaa gga tgg tat gat gat cgt cct His Asn Ala Glu Tyr Phe Thr Phe Glu Gly Trp Tyr Asp Asp Arg Pro 835 840 845 | 2661 |
| cgt tca att atg gtg tat gca cct tgt aaa aca gca gtg gtc tat gca Arg Ser Ile Met Val Tyr Ala Pro Cys Lys Thr Ala Val Val Tyr Ala 850 855 860 | 2709 |
| cta gta gac aaa gaa gaa gaa gaa gaa gaa gaa gaa gaa gaa gaa gta Leu Val Asp Lys Glu Glu Glu Glu Glu Glu Glu Glu Glu Glu Glu Val 865 870 875 | 2757 |

gca gca gta gaa gaa gta gta gta gaa gaa gaa tgaacgaact tgtgatcgcg 2810
 Ala Ala Val Glu Glu Val Val Val Glu Glu Glu
 880 885

ttgaaagatt tgaacgctac atagagcttc ttgacgtatc tggcaatatt gcatcagtct 2870

tggcggaatt tcatgtgaca caagggtttgc aattctttcc actattagta gtgcaacgat 2930

atacgcagag atgaagtgc gaacaaacat atgtaaaatc gatgaattta tgcgaatgc 2990

tgggacgatc gaattcctgc aggcggggg accccttagt tct 3033

<210> 15

<211> 889

<212> PRT

<213> Solanum tuberosum

<400> 15

Met Asn Lys Arg Ile Asp Leu Met Val Tyr Thr Leu Ser Gly Val Arg
 1 5 10 15

Phe Pro Thr Val Pro Ser Val Tyr Lys Ser Asn Gly Phe Ser Ser Asn
 20 25 30

Gly Asp Arg Arg Asn Ala Asn Val Ser Val Phe Leu Lys Lys His Ser
 35 40 45

Leu Ser Arg Lys Ile Leu Ala Glu Lys Ser Ser Tyr Asn Ser Glu Phe
 50 55 60

Arg Pro Ser Thr Val Ala Ala Ser Gly Lys Val Leu Val Pro Gly Thr
 65 70 75 80

Gln Ser Asp Ser Ser Ser Ser Thr Asp Gln Phe Glu Phe Thr Glu
 85 90 95

Thr Ser Pro Glu Asn Ser Pro Ala Ser Thr Asp Val Asp Ser Ser Thr
 100 105 110

Met Glu His Ala Ser Gln Ile Lys Thr Glu Asn Asp Asp Val Glu Pro
 115 120 125

Ser Ser Asp Leu Thr Gly Ser Val Glu Glu Leu Asp Phe Ala Ser Ser
 130 135 140

Leu Gln Leu Gln Glu Gly Gly Lys Leu Glu Glu Ser Lys Thr Leu Asn
 145 150 155 160

Thr Ser Glu Glu Thr Ile Ile Asp Glu Ser Asp Arg Ile Arg Glu Arg
 165 170 175

Gly Ile Pro Pro Pro Gly Leu Gly Gln Lys Ile Tyr Glu Ile Asp Pro
 180 185 190

| | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Leu | Thr | Asn | Tyr | Arg | Gln | His | Leu | Asp | Tyr | Arg | Tyr | Ser | Gln | Tyr | 195 | 200 | 205 | |
| Lys | Lys | Leu | Arg | Glu | Ala | Ile | Asp | Lys | Tyr | Glu | Gly | Gly | Leu | Glu | Ala | 210 | 215 | 220 | |
| Phe | Ser | Arg | Gly | Tyr | Glu | Lys | Met | Gly | Phe | Thr | Arg | Ser | Ala | Thr | Gly | 225 | 230 | 235 | 240 |
| Ile | Thr | Tyr | Arg | Glu | Trp | Ala | Leu | Gly | Ala | Gln | Ser | Ala | Ala | Leu | Ile | 245 | 250 | 255 | |
| Gly | Asp | Phe | Asn | Asn | Trp | Asp | Ala | Asn | Ala | Asp | Ile | Met | Thr | Arg | Asn | 260 | 265 | 270 | |
| Glu | Phe | Gly | Val | Trp | Glu | Ile | Phe | Leu | Pro | Asn | Asn | Val | Asp | Gly | Ser | 275 | 280 | 285 | |
| Pro | Ala | Ile | Pro | His | Gly | Ser | Arg | Val | Lys | Ile | Arg | Met | Asp | Thr | Pro | 290 | 295 | 300 | |
| Ser | Gly | Val | Lys | Asp | Ser | Ile | Pro | Ala | Trp | Ile | Asn | Tyr | Ser | Leu | Gln | 305 | 310 | 315 | 320 |
| Leu | Pro | Asp | Glu | Ile | Pro | Tyr | Asn | Gly | Ile | His | Tyr | Asp | Pro | Pro | Glu | 325 | 330 | 335 | |
| Glu | Glu | Arg | Tyr | Ile | Phe | Gln | His | Pro | Arg | Pro | Lys | Lys | Pro | Lys | Ser | 340 | 345 | 350 | |
| Leu | Arg | Ile | Tyr | Glu | Ser | His | Ile | Gly | Met | Ser | Ser | Pro | Glu | Pro | Lys | 355 | 360 | 365 | |
| Ile | Asn | Ser | Tyr | Val | Asn | Phe | Arg | Asp | Glu | Val | Leu | Pro | Arg | Ile | Lys | 370 | 375 | 380 | |
| Lys | Leu | Gly | Tyr | Asn | Ala | Leu | Gln | Ile | Met | Ala | Ile | Gln | Glu | His | Ser | 385 | 390 | 395 | 400 |
| Tyr | Tyr | Ala | Ser | Phe | Gly | Tyr | His | Val | Thr | Asn | Phe | Phe | Ala | Pro | Ser | 405 | 410 | 415 | |
| Ser | Arg | Phe | Gly | Thr | Pro | Asp | Asp | Leu | Lys | Ser | Leu | Ile | Asp | Lys | Ala | 420 | 425 | 430 | |
| His | Glu | Leu | Gly | Ile | Val | Val | Leu | Met | Asp | Ile | Val | His | Ser | His | Ala | 435 | 440 | 445 | |
| Ser | Asn | Asn | Thr | Leu | Asp | Gly | Leu | Asn | Met | Phe | Asp | Cys | Thr | Asp | Ser | 450 | 455 | 460 | |
| Cys | Tyr | Phe | His | Ser | Gly | Ala | Arg | Gly | Tyr | His | Trp | Met | Trp | Asp | Ser | 465 | 470 | 475 | 480 |

| | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Arg | Leu | Phe | Asn | Tyr | Gly | Asn | Trp | Glu | Val | Leu | Arg | Tyr | Leu | Leu | Ser | 485 | 490 | 495 |
| Asn | Ala | Arg | Trp | Trp | Leu | Asp | Ala | Phe | Lys | Phe | Asp | Gly | Phe | Arg | Phe | 500 | 505 | 510 |
| Asp | Gly | Val | Thr | Ser | Met | Met | Tyr | Ile | His | His | Gly | Leu | Ser | Val | Gly | 515 | 520 | 525 |
| Phe | Thr | Gly | Asn | Tyr | Glu | Glu | Tyr | Phe | Gly | Leu | Ala | Thr | Asp | Val | Asp | 530 | 535 | 540 |
| Ala | Val | Val | Tyr | Leu | Met | Leu | Val | Asn | Asp | Leu | Ile | His | Gly | Leu | Phe | 545 | 550 | 555 |
| Pro | Asp | Ala | Ile | Thr | Ile | Gly | Glu | Asp | Val | Ser | Gly | Met | Pro | Thr | Phe | 565 | 570 | 575 |
| Cys | Ile | Pro | Val | Gln | Glu | Gly | Gly | Val | Gly | Phe | Asp | Tyr | Arg | Leu | His | 580 | 585 | 590 |
| Met | Ala | Ile | Ala | Asp | Lys | Arg | Ile | Glu | Leu | Leu | Lys | Lys | Arg | Asp | Glu | 595 | 600 | 605 |
| Asp | Trp | Arg | Val | Gly | Asp | Ile | Val | His | Thr | Leu | Thr | Asn | Arg | Arg | Trp | 610 | 615 | 620 |
| Ser | Glu | Lys | Cys | Val | Ser | Tyr | Ala | Glu | Ser | His | Asp | Gln | Ala | Leu | Val | 625 | 630 | 635 |
| Gly | Asp | Lys | Thr | Ile | Ala | Phe | Trp | Leu | Met | Asp | Lys | Asp | Met | Tyr | Asp | 645 | 650 | 655 |
| Phe | Met | Ala | Leu | Asp | Arg | Pro | Ser | Thr | Ser | Leu | Ile | Asp | Arg | Gly | Ile | 660 | 665 | 670 |
| Ala | Leu | His | Lys | Met | Ile | Arg | Leu | Val | Thr | Met | Gly | Leu | Gly | Gly | Glu | 675 | 680 | 685 |
| Gly | Tyr | Leu | Asn | Phe | Met | Gly | Asn | Glu | Phe | Gly | His | Pro | Glu | Trp | Ile | 690 | 695 | 700 |
| Asp | Phe | Pro | Arg | Ala | Glu | Gln | His | Leu | Ser | Asp | Gly | Ser | Val | Ile | Pro | 705 | 710 | 715 |
| Gly | Asn | Gln | Phe | Ser | Tyr | Asp | Lys | Cys | Arg | Arg | Arg | Phe | Asp | Leu | Gly | 725 | 730 | 735 |
| Asp | Ala | Glu | Tyr | Leu | Arg | Tyr | Arg | Gly | Leu | Gln | Glu | Phe | Asp | Arg | Pro | 740 | 745 | 750 |
| Met | Gln | Tyr | Leu | Glu | Asp | Lys | Tyr | Glu | Phe | Met | Thr | Ser | Glu | His | Gln | 755 | 760 | 765 |

Phe Ile Ser Arg Lys Asp Glu Gly Asp Arg Met Ile Val Phe Glu Lys
 770 775 780
 Gly Asn Leu Val Phe Val Phe Asn Phe His Trp Thr Lys Ser Tyr Ser
 785 790 795 800
 Asp Tyr Arg Ile Ala Cys Leu Lys Pro Gly Lys Tyr Lys Val Ala Leu
 805 810 815
 Asp Ser Asp Asp Pro Leu Phe Gly Gly Phe Gly Arg Ile Asp His Asn
 820 825 830
 Ala Glu Tyr Phe Thr Phe Glu Gly Trp Tyr Asp Asp Arg Pro Arg Ser
 835 840 845
 Ile Met Val Tyr Ala Pro Cys Lys Thr Ala Val Val Tyr Ala Leu Val
 850 855 860
 Asp Lys Glu Glu Glu Glu Glu Glu Glu Glu Glu Glu Glu Val Ala Ala
 865 870 875 880
 Val Glu Glu Val Val Val Glu Glu Glu
 885

<210> 16
 <211> 2576
 <212> DNA
 <213> Solanum tuberosum

<400> 16
 tcattaaaga ggagaaatta actatgagag gatctcacca tcaccatcac catgggatct 60
 tggctgaaaa gtcttcttac aattccgaat tccgaccttc tacagttgca gcatcgggga 120
 aagtccttgt gcctggaacc cagagtgata gctcctcatc ctcaacaaac caatttgagt 180
 tcaactgagac atctccagaa aattccccag catcaactga ttagatagat tcaacaatgg 240
 aacacgctag ccagattaaa actgagaacg atgacgttga gccgtcaagt gatcttacag 300
 gaagtgttga agagctggat tttgcttcat cactacaact acaagaagggt ggtaaactgg 360
 aggagtctaa aacattaaat acttctgaag agacaattat tgatgaatct gataggatca 420
 gagagagggg catccctcca cctggacttg gtcagaagat ttatgaaata gacccctttt 480
 tgacaaacta tcgtcaacac cttgattaca ggtattcaca gtacaagaaa ctgagggagg 540
 caattgacaa gtatgagggt ggtttggaag ctttttctcg tggttatgaa aaaatggggt 600
 tcaactcgtag tgctacagg atcacttacc gtgagtgggc tcctgggtgcc cagtcagctg 660
 ccctcattgg agatttcaac aattgggacg caaatgctga cattatgact cggaatgaat 720
 ttggtgtctg ggagattttt ctgccaaata atgtggatgg ttctcctgca attcctcatg 780
 ggtccagagt gaagatacgt atggacactc catcaggtgt taaggattcc attcctgctt 840
 ggatcaacta ctctacagct tcctgatgaa attccatata atggaatata ttatgatcca 900
 cccgaagagg agaggtatat cttccaacac ccacggccaa agaaaccaa gtcgctgaga 960
 atatatgaat ctcatattgg aatgagtagt ccggagccta aaattaactc atacgtgaat 1020
 tttagagatg aagttcttcc tcgcataaaa aagcttgggg acaatgcgct gcaaattatg 1080
 gctattcaag agcattctta ttatgctagt tttgggtatc atgtcacaaa tttttttgca 1140
 ccaagcagcc gttttggaac gcccagcgac cttaagtctt tgattgataa agctcatgag 1200
 ctaggaattg ttgttctcat ggacattgtt cacagccatg catcaaataa tacttttagat 1260
 ggactgaaca tgtttgacgg caccgatagt tgttactttc actctggagc tcgtgggttat 1320

| | | | | | | |
|------------|-------------|------------|-------------|-------------|------------|------|
| cattggatgt | gggattcccc | cctttttaac | tatggaaact | gggagggtact | taggtatctt | 1380 |
| ctctcaaatg | cgagatgggtg | gttggatgag | ttcaaatttg | atggatttag | atttgatggt | 1440 |
| gtgacatcaa | tgatgtatac | tcaccacgga | ttatcggtgg | gattcactgg | gaactacgag | 1500 |
| gaatactttg | gactcgcaac | tgatgtggat | gctgttgtgt | atctgatgct | ggtcaacgat | 1560 |
| cttattcatg | ggcttttccc | agatgcaatt | accattgggtg | aagatgttag | cggaatgccg | 1620 |
| acattttgta | ttcccgttca | agatgggggt | gttggctttg | actatcggct | gcatatggca | 1680 |
| attgctgata | aatggattga | gttgctcaag | aaacgggatg | aggattggag | agtgggtgat | 1740 |
| attgttcata | cactgacaaa | tagaagatgg | tcggaaaagt | gtgtttcata | cgctgaaagt | 1800 |
| catgatcaag | ctctagtcgg | tgataaaact | atagcattct | ggctgatgga | caaggatatg | 1860 |
| tatgatttta | tggctctgga | tagaccgcca | acatcattaa | tagatcgtgg | gatagcattg | 1920 |
| cacaagatga | ttaggcttgt | aactatggga | ttaggaggag | aaggggtacct | aaatttcatg | 1980 |
| ggaaatgaat | tcggccaccc | tgagtggatt | gattttcccta | gggctgaaca | acacctctct | 2040 |
| gatgactcag | taattccccg | aaaccaattc | agttatgata | aatgcagacg | gagatttgac | 2100 |
| ctgggagatg | cagaatattt | aagataccgt | gggttgcaag | aatttgaccg | ggctatgcag | 2160 |
| tatcttgaag | ataaatatga | gtttatgact | tcagaacacc | agttcatatc | acgaaaggat | 2220 |
| gaaggagata | ggatgattgt | atttgaaaaa | ggaaacctag | tttttgtctt | taattttcac | 2280 |
| tggacaaaaa | gctattcaga | ctatcgcata | ggctgcctga | agcctggaaa | atacaagggt | 2340 |
| gccttggaat | cagatgatcc | actttttggt | ggcttcggga | gaattgatca | taatgccgaa | 2400 |
| tatttcacct | ttgaaggatg | gtatgatgat | cgcttcggtt | caattatggt | gtatgcacct | 2460 |
| tgtagaacag | cagtgggtcta | tgactagtag | gacaaagaag | aagaagaaga | agaagaagaa | 2520 |
| gaagaagtag | cagtagtaga | agaagtagta | gtagaagaag | aatgaacgaa | cttgtg | 2576 |

<210> 17

<211> 2529

<212> DNA

<213> Solanum tuberosum

<220>

<221> modified_base

<222> (2492)..(2492)

<223> a, c, g, t, other or unknown

<220>

<221> modified_base

<222> (2499)..(2499)

<223> a, c, g, t, other or unknown

<220>

<221> modified_base

<222> (2516)..(2516)

<223> a, c, g, t, other or unknown

<220>

<221> modified_base

<222> (2520)..(2521)

<223> a, c, g, t, other or unknown

<400> 17

| | | | | | | | |
|------------|------------|------------|------------|------------|------------|------------|-----|
| ggatgcta | atgtttct | gtat | tcttgaaaaa | gcactctctt | tcacggaaga | tcttggtga | 60 |
| aaagtctt | cttaca | attccg | aatcccgacc | ttctacagtt | gcagcatcgg | ggaaagtcct | 120 |
| tgtgcctg | gaaycc | agagt | atagctcctc | atcctcaaca | gaccaatttg | agttcactga | 180 |
| gacatctcca | gaaaattccc | cagcatcaac | tgatgtagat | agttcaacaa | tggaacacgc | | 240 |
| tagccagatt | aaaactgaga | acgatgacgt | tgagccgtca | agtgatctta | caggaagtgt | | 300 |

| | | | | | | |
|------------|------------|------------|-------------|-------------|-------------|------|
| tgaagagctg | gatttttgc | catcactaca | actacaagaa | ggtggtaa | tggaggagtc | 360 |
| taaaacatta | aatacttctg | aagagacaat | tattgatgaa | tctgatagga | tcagagagag | 420 |
| gggcatccct | ccacctggac | ttggtcagaa | gatttatgaa | atagaccccc | ttttgacaaa | 480 |
| ctatcgtaaa | caccttgatt | acaggtattc | acagtacaag | aaactgaggg | aggcaattga | 540 |
| caagtatgag | ggtggtttgg | aagctttttc | tcgtggttat | gaaaaaatgg | gtttcactcg | 600 |
| tagtgctaca | ggtatcactt | accgtgagtg | ggctcctggg | gcccagtcag | ctgccctcat | 660 |
| tggagatttc | aacaattggg | acgcaa | tgacattatg | actcggaatg | aatttgggtg | 720 |
| ctgggagatt | tttctgccaa | ataatgtgga | tggttctcct | gcaattcctc | atgggtccag | 780 |
| agtgaagata | cgyatggaca | ctccatcagg | tgtaagga | tccattcctg | cttggatcaa | 840 |
| ctactcttta | cagcttctcg | atgaaattcc | atataatgga | atataattatg | atccaccga | 900 |
| aggagagagg | tatrtcttcc | aacaccacg | gccaaagaaa | ccaaagtcgc | tgagaatata | 960 |
| tgaatctcat | attggaatga | gtagtcagg | gcctaaaatt | aactcatacg | tgaattttag | 1020 |
| agatgaagtt | cttctctgca | taaaaaasct | tgggtacaat | gcggtgcaaa | ttatggctat | 1080 |
| tcaagagcat | tcttattatg | ctagtttttg | ttatcatgtc | acaaattttt | ttgcaccaag | 1140 |
| cagccgtttt | ggaacgccc | acgaccttaa | gtctttgatt | gataaagctc | atgagctagg | 1200 |
| aattgttggt | ctcatggaca | ttgttcacag | ccatgcatca | aataatactt | tagatggact | 1260 |
| gaacatggtt | gacggcacag | atagttgtta | ctttcactct | ggagctcgtg | gttatcattg | 1320 |
| gatgtgggat | tcccgcctct | ttaactatgg | aaactgggag | gtacttaggt | atcttctctc | 1380 |
| aaatgcgaga | tggtggttgg | atgagttcaa | atttgatgga | tttagatttg | atgggtgtgac | 1440 |
| atcaatgatg | tatactcacc | acggattatc | ggtgggattc | actgggaact | acgaggaata | 1500 |
| ctttgggact | gcaactgatg | tggtgctgtg | tggttatctg | atgctggtca | acgatcttat | 1560 |
| tcacgggctt | ttcccagatg | caattaccat | tggtgaagat | gttagcggaa | tgccgacatt | 1620 |
| ttgtattccc | gttcaagatg | ggggtgttgg | ctttgactat | cggctgcata | tggcaattgc | 1680 |
| tgataaatgg | attgagttgc | tcaagaaacg | ggatgaggat | tggagagtgg | gtgatattgt | 1740 |
| tcatacactg | acaaatagaa | gatggtcgga | aaagtgtgtt | tcatmcgctg | aaagtcatga | 1800 |
| tcaagctcta | gtcggtgata | aaactatagc | atytctggctg | atggacaagg | atatgtatga | 1860 |
| ttttatggct | ctggatagac | cgycaacayc | attaatagat | cgtgggatag | cattgcacaa | 1920 |
| gatgattagg | cttgtaacta | tgggattagg | aggagaagg | tacctaaatt | tcattgggaaa | 1980 |
| tgaattcggc | caccctgagt | ggattgattt | ccctagggct | garcaacacc | tctctgatgg | 2040 |
| ctcagtaatt | cccggaaacc | aattcagtta | tgataaatgc | agacggagat | ttgacctggg | 2100 |
| agatgcagaa | tatttaagat | accatgggtt | gcaagaattt | gaccgggcta | tgcagtatct | 2160 |
| tgaagataaa | tatgagttta | tgacttcaga | acaccagttc | atatcacgaa | aggatgaagg | 2220 |
| agataggatg | attgtatttg | aaaraggaaa | cctagttttt | gtctttaatt | ttcactggac | 2280 |
| aaatagctat | tcagactatc | gcataggctg | cctgaagcct | ggaaaataca | aggttggctt | 2340 |
| ggactcagat | gatccacttt | ttggtggctt | cgggagaatt | gatcataatg | ccgaatattt | 2400 |
| cacctctgaa | ggatcgatg | atgatcgctc | tcgttcaatt | atgggtgtatg | cacctagtag | 2460 |
| aacagcagtg | gtctatgcac | tagtagacaa | antagaagna | gaagaagaag | aagaanccgn | 2520 |
| ngaagaatt | | | | | | 2529 |

<210> 18

<211> 3187

<212> DNA

<213> Solanum tuberosum

<220>

<221> modified_base

<222> (3071)..(3071)

<223> a, c, g, t, other or unknown

<220>

<221> modified_base

<222> (3159)..(3159)

<223> a, c, g, t, other or unknown

<220>
 <221> modified_base
 <222> (3162)..(3165)
 <223> a, c, g, t, other or unknown

<400> 18
 aaaaacctcc tccactcagt cttgggatct ctctctctct tcacgcttct cttggggcct 60
 tgaactcagc aatttgacac tcagttagtt acactgccat cactcatcag atctctattt 120
 tttctcttaa ttccaaccaa ggaatgaatt aaaagattag atttgaagga gagaagaaga 180
 aagatggtgt atacactctc tggagttcgt tttcctactg ttccatcagt gtacaaatct 240
 aatggattca gcagtaatgg tgatcggagg aatgctaattg tttctgtatt cttgaaaaag 300
 cactctcttt cacggaagat cttggctgaa aagtcttctt acgattccga atcccgaact 360
 tctacagttg cagcatcggg gaaagtcctt gtacctgga tccagagtga tagctcctca 420
 tcctcaacag accaatttga gttcactgag acagctccag aaaattcccc agcatcaact 480
 gatgtggata gttcaacaat ggaacacgct agccagatta aaactgagaa cgatgacgtt 540
 gagccgtcaa gtgatcttac aggaagtgtt gaagagttgg attttgcttc atcactacaa 600
 ctacaagaag gtggtaaact ggaggagtct aaaacattaa atacttctga agagacaaat 660
 attgatgaat ctgataggat cagagagagg ggcattccctc cacttggaag tggtcagaag 720
 atttatgaaa tagaccctct tttgacaaac tatcgtcaac accttgatta caggtattca 780
 cagtacaaga aaatgagggg ggcaattgac aagtatgagg gtggtttgga agctttttct 840
 cgtggttatg aaaaaatggg tttcactcgt agtgctacag gtatcactta ccgtgagtgg 900
 gctcctggtg cccagtcagc tgctctcatt ggagatttca acaattggga cgcaaagtct 960
 gacattatga ctcggaatga atttggtgtc tgggagattt ttctgccaaa taatgtggat 1020
 gggtctcctg caattcctca tgggtccaga gtgaagatac gcatggacac ttcatcaggt 1080
 gttaaggatt ccattcctgc ttggatcaac tactctttac agcttcctga tgaaattcca 1140
 tataatggaa tatattatga tccaccgaa gaggagaggt atgtcttcca acaccacgg 1200
 ccaaagaaac caaagtcgct gagaatatat gaatctcata ttggaatgag tagtccggag 1260
 cctaaaatta actcatcagt gaattttaga gatgaagttc ttctcgcac aaaaaacctt 1320
 ggggtacaatg cgggtgcaaat tatggctatt caagagcatt cttattatgc tagttttggt 1380
 tatcatgtca caaatttttt tgcaccaagc agccgttttg gaacgcccga cgaccttaag 1440
 tctttgattg ataaagctca tgagctagga attgttggtc tcatggacat tgttcacagc 1500
 catgcatcaa ataatacttt agatggactg aacatgtttg acggcacaga tagttgttac 1560
 tttcactctg gagctcgtgg ttatcattgg atgtgggatt cccgcctctt taactatgga 1620
 aactgggagg tacttaggta tcttctctca aatgcgagat ggtggttgga tgagtgcaa 1680
 tttgrtggtt ttagattcga tgggtgtgaca tcaatgatgt atactacca cggattatcg 1740
 gtgggattca ctgggaacta cgaggaatac tttggactcg caactgatgt rgatgctgcc 1800
 gtgtatctga tgctggccaa cgatcttatt catgggcttt tccagatgc aattaccatt 1860
 ggtgaagatg ttagcggaaat gccgacattt tgtattcccg ttcaagatgg ggggtgttggc 1920
 tttgactatc ggctgcatat ggcaattgct gataaatgga ttgagttgct caagaaacgg 1980
 gatgaggatt ggagagtggg tgatattggt catacactga caaatagaag atggctcgaa 2040
 aagtgtgttt catacgctga aagtcatgat caagctctag tcggtgataa aactatagca 2100
 ttctggctga tggacaagga tatgtatgat tttatggctt tggatagacc gtcaacatca 2160
 ttaatagatc gtgggtagac attgcacaag atgattagga ttgtaactat gggattagga 2220
 ggagaagggg acctaaattt catgggaaat gaattcggcc accctgagtg gattgatttc 2280
 cctagggtcg aacaacacct ctctgatggc tcagtaattc ccggaacca attcagttat 2340
 gataaatgca gacggagatt tgacctggga gatgcagaat atttaagata ccgtgggttg 2400
 caagaatttg accgggctat gcagtatctt gaagataaat atgagtttat gacttcagaa 2460
 caccagttca tatcacgaaa ggatgaagga gataggatga ttgtatttga aaaaggaaac 2520
 ctagtttttg tctttaattt tcaactggga aaaagctatt cagactatcg cataggctgg 2580
 ctgaagcctg gaaaatacaa gggtgccttg gactcagatg atccactttt tgggtggcttc 2640
 gggagaattg atcataatgc cgaatgtttc acctttgaag gatggtatga tgatcgtcct 2700
 cgttcaatta tgggtgatgc acctagtaga acagcagtggt tctatgcact agtagacaaa 2760
 gaagaagaag aagaagaagt agcagtagta gaagaagtag tagtagaaga agaataaacg 2820

| | | | | | | |
|-------------|------------|------------|------------|------------|------------|------|
| aacttgatgat | cgcgttgaaa | gatttgaacg | ctacatagag | cttcttgacg | tatctggcaa | 2880 |
| tattgcatca | gtcttggcgg | aatttcatgt | gacaaaaggt | ttgcaattct | ttccactatt | 2940 |
| agtagtgcaa | cgatatacgc | agagatgaag | tgctgaacaa | acatatgtaa | aatcgatgaa | 3000 |
| tttatgtcga | atgctgggac | gggcttcagc | aggttttgct | tagtgagttc | tgtaaattgt | 3060 |
| catctcttta | natgtacagc | ccactagaaa | tcaattatgt | gagacctaaa | aaacaataac | 3120 |
| cataaaatgg | aaatagtgtc | gatctaata | tgttttaanc | cnnnnaaaaa | aaaaaaaaaa | 3180 |
| actcgaag | | | | | | 3187 |

```
<210> 19
<211> 2578
<212> DNA
<213> Solanum tuberosum
```

```
<220>  
<221> CDS  
<222> (24) .. (2564)
```

```
<400> 19
tcattaaaga ggagaaatta act atg aga gga tct cac cat cac cat cac cat      53
                        Met Arg Gly Ser His His His His His His
                        1          5          10
```

ggg atc ttg gct gaa aag tct tct tac aat tcc gaa ttc cga cct tct 101
Gly Ile Leu Ala Glu Lys Ser Ser Tyr Asn Ser Glu Phe Arg Pro Ser
15 20 25

aca gtt gca gca tcg ggg aaa gtc ctt gtg cct gga acc cag agt gat 149
Thr Val Ala Ala Ser Gly Lys Val Leu Val Pro Gly Thr Gln Ser Asp
30 35 40

agc tcc tca tcc tca aca aac caa ttt gag ttc act gag aca tct cca 197
 Ser Ser Ser Ser Ser Thr Asn Gln Phe Glu Phe Thr Glu Thr Ser Pro
 45 50 55

gaa aat tcc cca gca tca act gat gta gat agt tca aca atg gaa cac 245
Glu Asn Ser Pro Ala Ser Thr Asp Val Asp Ser Ser Thr Met Glu His
60 65 70

gct agc cag att aaa act gag aac gat gac gtt gag ccg tca agt gat 293
Ala Ser Gln Ile Lys Thr Glu Asn Asp Asp Val Glu Pro Ser Ser Asp
75 80 85 90

ctt aca gga agt gtt gaa gag ctg gat ttt gct tca tca cta caa cta 341
Leu Thr Gly Ser Val Glu Glu Leu Asp Phe Ala Ser Ser Leu Gln Leu
95 100 105

caa gaa ggt ggt aaa ctg gag gag tct aaa aca tta aat act tct gaa 389
Gln Glu Gly Gly Lys Leu Glu Glu Ser Lys Thr Leu Asn Thr Ser Glu
110 115 120

gag aca att att gat gaa tct gat agg atc aga gag agg ggc atc cct 437
Glu Thr Ile Ile Asp Glu Ser Asp Arg Ile Arg Glu Arg Gly Ile Pro
125 130 135

| | |
|---|------|
| cca cct gga ctt ggt cag aag att tat gaa ata gac ccc ctt ttg aca | 485 |
| Pro Pro Gly Leu Gly Gln Lys Ile Tyr Glu Ile Asp Pro Leu Leu Thr | |
| 140 145 150 | |
| aac tat cgt caa cac ctt gat tac agg tat tca cag tac aag aaa ctg | 533 |
| Asn Tyr Arg Gln His Leu Asp Tyr Arg Tyr Ser Gln Tyr Lys Lys Leu | |
| 155 160 165 170 | |
| agg gag gca att gac aag tat gag ggt ggt ttg gaa gct ttt tct cgt | 581 |
| Arg Glu Ala Ile Asp Lys Tyr Glu Gly Gly Leu Glu Ala Phe Ser Arg | |
| 175 180 185 | |
| ggt tat gaa aaa atg ggt ttc act cgt agt gct aca ggt atc act tac | 629 |
| Gly Tyr Glu Lys Met Gly Phe Thr Arg Ser Ala Thr Gly Ile Thr Tyr | |
| 190 195 200 | |
| cgt gag tgg gct cct ggt gcc cag tca gct gcc ctc att gga gat ttc | 677 |
| Arg Glu Trp Ala Pro Gly Ala Gln Ser Ala Ala Leu Ile Gly Asp Phe | |
| 205 210 215 | |
| aac aat tgg gac gca aat gct gac att atg act cgg aat gaa ttt ggt | 725 |
| Asn Asn Trp Asp Ala Asn Ala Asp Ile Met Thr Arg Asn Glu Phe Gly | |
| 220 225 230 | |
| gtc tgg gag att ttt ctg cca aat aat gtg gat ggt tct cct gca att | 773 |
| Val Trp Glu Ile Phe Leu Pro Asn Asn Val Asp Gly Ser Pro Ala Ile | |
| 235 240 245 250 | |
| cct cat ggg tcc aga gtg aag ata cgt atg gac act cca tca ggt gtt | 821 |
| Pro His Gly Ser Arg Val Lys Ile Arg Met Asp Thr Pro Ser Gly Val | |
| 255 260 265 | |
| aag gat tcc att cct gct tgg atc aac tac tct tca cag ctt cct gat | 869 |
| Lys Asp Ser Ile Pro Ala Trp Ile Asn Tyr Ser Ser Gln Leu Pro Asp | |
| 270 275 280 | |
| gaa att cca tat aat gga ata tat tat gat cca ccc gaa gag gag agg | 917 |
| Glu Ile Pro Tyr Asn Gly Ile Tyr Tyr Asp Pro Pro Glu Glu Glu Arg | |
| 285 290 295 | |
| tat atc ttc caa cac cca cgg cca aag aaa cca aag tcg ctg aga ata | 965 |
| Tyr Ile Phe Gln His Pro Arg Pro Lys Lys Pro Lys Ser Leu Arg Ile | |
| 300 305 310 | |
| tat gaa tct cat att gga atg agt agt ccg gag cct aaa att aac tca | 1013 |
| Tyr Glu Ser His Ile Gly Met Ser Ser Pro Glu Pro Lys Ile Asn Ser | |
| 315 320 325 330 | |
| tac gtg aat ttt aga gat gaa gtt ctt cct cgc ata aaa aag ctt ggg | 1061 |
| Tyr Val Asn Phe Arg Asp Glu Val Leu Pro Arg Ile Lys Lys Leu Gly | |
| 335 340 345 | |

| | |
|---|------|
| tac aat gcg gtg caa att atg gct att caa gag cat tct tat tat gct | 1109 |
| Tyr Asn Ala Val Gln Ile Met Ala Ile Gln Glu His Ser Tyr Tyr Ala | |
| 350 355 360 | |
| agt ttt ggt tat cat gtc aca aat ttt ttt gca cca agc agc cgt ttt | 1157 |
| Ser Phe Gly Tyr His Val Thr Asn Phe Phe Ala Pro Ser Ser Arg Phe | |
| 365 370 375 | |
| gga acg ccc gac gac ctt aag tct ttg att gat aaa gct cat gag cta | 1205 |
| Gly Thr Pro Asp Asp Leu Lys Ser Leu Ile Asp Lys Ala His Glu Leu | |
| 380 385 390 | |
| gga att gtt gtt ctc atg gac att gtt cac agc cat gca tca aat aat | 1253 |
| Gly Ile Val Val Leu Met Asp Ile Val His Ser His Ala Ser Asn Asn | |
| 395 400 405 410 | |
| act tta gat gga ctg aac atg ttt gac ggc acc gat agt tgt tac ttt | 1301 |
| Thr Leu Asp Gly Leu Asn Met Phe Asp Gly Thr Asp Ser Cys Tyr Phe | |
| 415 420 425 | |
| cac tct gga gct cgt ggt tat cat tgg atg tgg gat tcc cgc ctt ttt | 1349 |
| His Ser Gly Ala Arg Gly Tyr His Trp Met Trp Asp Ser Arg Leu Phe | |
| 430 435 440 | |
| aac tat gga aac tgg gag gta ctt agg tat ctt ctc tca aat gcg aga | 1397 |
| Asn Tyr Gly Asn Trp Glu Val Leu Arg Tyr Leu Leu Ser Asn Ala Arg | |
| 445 450 455 | |
| tgg tgg ttg gat gag ttc aaa ttt gat gga ttt aga ttt gat ggt gtg | 1445 |
| Trp Trp Leu Asp Glu Phe Lys Phe Asp Gly Phe Arg Phe Asp Gly Val | |
| 460 465 470 | |
| aca tca atg atg tat act cac cac gga tta tcg gtg gga ttc act ggg | 1493 |
| Thr Ser Met Met Tyr Thr His His Gly Leu Ser Val Gly Phe Thr Gly | |
| 475 480 485 490 | |
| aac tac gag gaa tac ttt gga ctc gca act gat gtg gat gct gtt gtg | 1541 |
| Asn Tyr Glu Glu Tyr Phe Gly Leu Ala Thr Asp Val Asp Ala Val Val | |
| 495 500 505 | |
| tat ctg atg ctg gtc aac gat ctt att cat ggg ctt ttc cca gat gca | 1589 |
| Tyr Leu Met Leu Val Asn Asp Leu Ile His Gly Leu Phe Pro Asp Ala | |
| 510 515 520 | |
| att acc att ggt gaa gat gtt agc gga atg ccg aca ttt tgt att ccc | 1637 |
| Ile Thr Ile Gly Glu Asp Val Ser Gly Met Pro Thr Phe Cys Ile Pro | |
| 525 530 535 | |
| gtt caa gat ggg ggt gtt ggc ttt gac tat cgg ctg cat atg gca att | 1685 |
| Val Gln Asp Gly Gly Val Gly Phe Asp Tyr Arg Leu His Met Ala Ile | |
| 540 545 550 | |

| | |
|---|------|
| gct gat aaa tgg att gag ttg ctc aag aaa cgg gat gag gat tgg aga Ala Asp Lys Trp Ile Glu Leu Leu Lys Lys Arg Asp Glu Asp Trp Arg 555 560 565 570 | 1733 |
| gtg ggt gat att gtt cat aca ctg aca aat aga aga tgg tcg gaa aag Val Gly Asp Ile Val His Thr Leu Thr Asn Arg Arg Trp Ser Glu Lys 575 580 585 | 1781 |
| tgt gtt tca tac gct gaa agt cat gat caa gct cta gtc ggt gat aaa Cys Val Ser Tyr Ala Glu Ser His Asp Gln Ala Leu Val Gly Asp Lys 590 595 600 | 1829 |
| act ata gca ttc tgg ctg atg gac aag gat atg tat gat ttt atg gct Thr Ile Ala Phe Trp Leu Met Asp Lys Asp Met Tyr Asp Phe Met Ala 605 610 615 | 1877 |
| ctg gat aga ccg cca aca tca tta ata gat cgt ggg ata gca ttg cac Leu Asp Arg Pro Pro Thr Ser Leu Ile Asp Arg Gly Ile Ala Leu His 620 625 630 | 1925 |
| aag atg att agg ctt gta act atg gga tta gga gga gaa ggg tac cta Lys Met Ile Arg Leu Val Thr Met Gly Leu Gly Gly Glu Gly Tyr Leu 635 640 645 650 | 1973 |
| aat ttc atg gga aat gaa ttc ggc cac cct gag tgg att gat ttc cct Asn Phe Met Gly Asn Glu Phe Gly His Pro Glu Trp Ile Asp Phe Pro 655 660 665 | 2021 |
| agg gct gaa caa cac ctc tct gat gac tca gta att ccc gga aac caa Arg Ala Glu Gln His Leu Ser Asp Asp Ser Val Ile Pro Gly Asn Gln 670 675 680 | 2069 |
| ttc agt tat gat aaa tgc aga cgg aga ttt gac ctg gga gat gca gaa Phe Ser Tyr Asp Lys Cys Arg Arg Arg Phe Asp Leu Gly Asp Ala Glu 685 690 695 | 2117 |
| tat tta aga tac cgt ggg ttg caa gaa ttt gac cgg gct atg cag tat Tyr Leu Arg Tyr Arg Gly Leu Gln Glu Phe Asp Arg Ala Met Gln Tyr 700 705 710 | 2165 |
| ctt gaa gat aaa tat gag ttt atg act tca gaa cac cag ttc ata tca Leu Glu Asp Lys Tyr Glu Phe Met Thr Ser Glu His Gln Phe Ile Ser 715 720 725 730 | 2213 |
| cga aag gat gaa gga gat agg atg att gta ttt gaa aaa gga aac cta Arg Lys Asp Glu Gly Asp Arg Met Ile Val Phe Glu Lys Gly Asn Leu 735 740 745 | 2261 |
| gtt ttt gtc ttt aat ttt cac tgg aca aaa agc tat tca gac tat cgc Val Phe Val Phe Asn Phe His Trp Thr Lys Ser Tyr Ser Asp Tyr Arg 750 755 760 | 2309 |

ata ggc tgc ctg aag cct gga aaa tac aag gtt gcc ttg gac tca gat 2357
 Ile Gly Cys Leu Lys Pro Gly Lys Tyr Lys Val Ala Leu Asp Ser Asp
 765 770 775

 gat cca ctt ttt ggt ggc ttc ggg aga att gat cat aat gcc gaa tat 2405
 Asp Pro Leu Phe Gly Gly Phe Gly Arg Ile Asp His Asn Ala Glu Tyr
 780 785 790

 ttc acc ttt gaa gga tgg tat gat gat cgt cct cgt tca att atg gtg 2453
 Phe Thr Phe Glu Gly Trp Tyr Asp Asp Arg Pro Arg Ser Ile Met Val
 795 800 805 810

 tat gca cct tgt aga aca gca gtg gtc tat gca cta gta gac aaa gaa 2501
 Tyr Ala Pro Cys Arg Thr Ala Val Val Tyr Ala Leu Val Asp Lys Glu
 815 820 825

 gaa gaa gaa gaa gaa gaa gaa gaa gaa gta gca gta gta gaa gaa gta 2549
 Glu Glu Glu Glu Glu Glu Glu Glu Glu Val Ala Val Val Glu Glu Val
 830 835 840

 gta gta gaa gaa gaa tgaacgaact tgtg 2578
 Val Val Glu Glu Glu
 845

<210> 20
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<220>
 <221> modified_base
 <222> (12)..(12)
 <223> inosine

<400> 20
 aatttyatgg gnaaygartt ygg 23

<210> 21
 <211> 203
 <212> PRT
 <213> Zea mays

<400> 21
 Pro Ser Thr Pro Thr Ile Asp Arg Gly Ile Ala Leu His Lys Met Ile
 1 5 10 15

 Arg Leu Ile Thr Met Gly Leu Gly Gly Glu Gly Tyr Leu Asn Phe Met
 20 25 30

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gly | Asn | Glu | Phe | Gly | His | Pro | Glu | Trp | Ile | Asp | Phe | Pro | Arg | Gly | Pro |
| | | 35 | | | | | 40 | | | | | 45 | | | |
| Gln | Arg | Leu | Pro | Ser | Gly | Lys | Phe | Ile | Pro | Gly | Asn | Asn | Asn | Ser | Tyr |
| | | 50 | | | | 55 | | | | | 60 | | | | |
| Asp | Lys | Cys | Arg | Arg | Arg | Phe | Asp | Leu | Gly | Asp | Ala | Asp | Tyr | Leu | Arg |
| 65 | | | | | 70 | | | | | 75 | | | | 80 | |
| Tyr | His | Gly | Met | Gln | Glu | Phe | Asp | Gln | Ala | Met | Gln | His | Leu | Glu | Gln |
| | | | | 85 | | | | | 90 | | | | 95 | | |
| Lys | Tyr | Glu | Phe | Met | Thr | Ser | Asp | His | Gln | Tyr | Ile | Ser | Arg | Lys | His |
| | | | 100 | | | | | 105 | | | | | 110 | Lys | His |
| Glu | Glu | Asp | Lys | Val | Ile | Val | Phe | Glu | Lys | Gly | Asp | Leu | Val | Phe | Val |
| | | 115 | | | | | 120 | | | | | 125 | | | |
| Phe | Asn | Phe | His | Cys | Asn | Asn | Ser | Tyr | Phe | Asp | Tyr | Arg | Ile | Gly | Cys |
| | | 130 | | | | 135 | | | | | 140 | | | | |
| Arg | Lys | Pro | Gly | Val | Tyr | Lys | Val | Val | Leu | Asp | Ser | Asp | Ala | Gly | Leu |
| 145 | | | | | 150 | | | | | 155 | | | | 160 | |
| Phe | Gly | Gly | Phe | Ser | Arg | Ile | His | His | Ala | Ala | Glu | His | Phe | Thr | Ala |
| | | | | 165 | | | | | 170 | | | | | 175 | |
| Asp | Cys | Ser | His | Asp | Asn | Arg | Pro | Tyr | Ser | Phe | Ser | Val | Tyr | Thr | Pro |
| | | | 180 | | | | | 185 | | | | | 190 | | |
| Ser | Arg | Thr | Cys | Val | Val | Tyr | Ala | Pro | Val | Glu | | | | | |
| | | 195 | | | | | 200 | | | | | | | | |

```
<210> 22
<211> 213
<212> PRT
<213> Lathyrus sp.
```

<400> 22
Pro Ser Thr Pro Leu Ile Asp Arg Gly Ile Ala Leu His Lys Met Ile
1 5 10 15
Arg Leu Ile Thr Met Gly Leu Gly Gly Glu Gly Tyr Leu Asn Phe Met
20 25 30
Gly Asn Glu Phe Gly His Pro Glu Trp Ile Asp Phe Pro Arg Gly Glu
35 40 45
Gln His Leu Pro Asn Gly Lys Ile Val Pro Gly Asn Asn Asn Ser Tyr
50 55 60

Asp Lys Cys Arg Arg Arg Phe Asp Leu Gly Asp Ala Asp Tyr Leu Arg
 65 70 75 80
 Tyr His Gly Met Gln Glu Phe Asp Arg Ala Met Gln His Leu Glu Glu
 85 90 95
 Thr Tyr Gly Phe Met Thr Ser Glu His Gln Tyr Ile Ser Arg Lys Asn
 100 105 110
 Glu Gly Asp Arg Val Ile Ile Phe Glu Arg Asp Asn Leu Val Phe Val
 115 120 125
 Phe Asn Phe His Trp Thr Asn Ser Tyr Ser Asp Tyr Lys Val Gly Cys
 130 135 140
 Leu Lys Pro Gly Lys Tyr Lys Ile Val Leu Asp Ser Asp Asp Thr Leu
 145 150 155 160
 Phe Gly Gly Phe Asn Arg Leu Asn His Thr Ala Glu Tyr Phe Thr Ser
 165 170 175
 Glu Gly Trp Tyr Asp Asp Arg Pro Arg Ser Phe Leu Val Tyr Ala Pro
 180 185 190
 Ser Arg Thr Ala Val Val Tyr Ala Leu Ala Asp Gly Val Glu Ser Glu
 195 200 205
 Pro Ile Glu Leu Ser
 210

<210> 23
 <211> 258
 <212> PRT
 <213> Zea mays

<400> 23
 Pro Ala Ser Pro Thr Ile Asp Arg Gly Ile Ala Leu Gln Lys Met Ile
 1 5 10 15
 His Phe Ile Thr Met Ala Leu Gly Gly Asp Gly Tyr Leu Asn Phe Met
 20 25 30
 Gly Asn Glu Phe Gly His Pro Glu Trp Ile Asp Phe Pro Arg Glu Gly
 35 40 45
 Asn Asn Trp Ser Tyr Asp Lys Cys Arg Arg Gln Trp Ser Leu Val Asp
 50 55 60
 Thr Asp His Leu Arg Tyr Lys Tyr Met Asn Ala Phe Asp Gln Ala Met
 65 70 75 80
 Asn Ala Leu Asp Glu Arg Phe Ser Phe Leu Ser Ser Ser Lys Gln Ile
 85 90 95

Val Ser Asp Met Asn Asp Glu Glu Lys Val Ile Val Phe Glu Arg Gly
 100 105 110
 Asp Leu Val Phe Val Phe Asn Phe His Pro Lys Lys Thr Tyr Glu Gly
 115 120 125
 Tyr Lys Val Gly Cys Asp Leu Pro Gly Lys Tyr Arg Val Ala Leu Asp
 130 135 140
 Ser Asp Ala Leu Val Phe Gly Gly His Gly Arg Val Gly His Asp Val
 145 150 155 160
 Asp His Phe Thr Ser Pro Glu Gly Val Pro Gly Val Pro Glu Thr Asn
 165 170 175
 Phe Asn Asn Arg Pro Asn Ser Phe Lys Val Leu Ser Pro Pro Arg Thr
 180 185 190
 Cys Val Ala Tyr Tyr Arg Val Asp Glu Ala Gly Ala Gly Arg Arg Leu
 195 200 205
 His Ala Lys Ala Glu Thr Gly Lys Thr Ser Pro Ala Glu Ser Ile Asp
 210 215 220
 Val Lys Ala Ser Arg Ala Ser Ser Lys Glu Asp Lys Glu Ala Thr Ala
 225 230 235 240
 Gly Gly Lys Lys Gly Trp Lys Phe Ala Arg Gln Pro Ser Asp Gln Asp
 245 250 255

Thr Lys

<210> 24
 <211> 210
 <212> PRT
 <213> *Oryza sativa*

<400> 24
 Pro Ala Ser Pro Thr Ile Asn Arg Gly Ile Ala Leu Gln Lys Met Ile
 1 5 10 15
 His Phe Ile Thr Met Ala Leu Gly Gly Asp Gly Tyr Leu Asn Phe Met
 20 25 30
 Gly Asn Glu Phe Gly His Pro Glu Trp Ile Asp Phe Pro Arg Glu Gly
 35 40 45
 Asn Asn Trp Ser Tyr Asp Lys Cys Arg Arg Gln Trp Ser Leu Val Asp
 50 55 60
 Thr Asp His Leu Arg Tyr Lys Tyr Met Asn Ala Phe Asp Gln Ala Met
 65 70 75 80

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asn | Ala | Leu | Glu | Glu | Glu | Phe | Ser | Phe | Leu | Ser | Ser | Ser | Lys | Gln | Ile |
| | | | | 85 | | | | | | | | | | | |
| Val | Ser | Asp | Met | Asn | Glu | Lys | Asp | Lys | Val | Ile | Val | Phe | Glu | Arg | Gly |
| | | | | 100 | | | | | | | | | | | |
| Asp | Leu | Val | Phe | Val | Phe | Asn | Phe | His | Pro | Asn | Lys | Thr | Tyr | Lys | Gly |
| | | | | 115 | | | | | | | | | | | |
| Tyr | Lys | Val | Gly | Cys | Asp | Leu | Pro | Gly | Lys | Tyr | Arg | Val | Ala | Leu | Asp |
| | | | | 130 | | | | | | | | | | | |
| Ser | Asp | Ala | Leu | Val | Phe | Gly | Gly | His | Gly | Arg | Val | Gly | His | Asp | Val |
| | | | | 145 | | | | | | | | | | | |
| Asp | His | Phe | Thr | Ser | Pro | Glu | Gly | Met | Pro | Gly | Val | Pro | Glu | Thr | Asn |
| | | | | 165 | | | | | | | | | | | |
| Phe | Asn | Asn | Arg | Pro | Asn | Ser | Phe | Lys | Val | Leu | Ser | Pro | Pro | Arg | Thr |
| | | | | 180 | | | | | | | | | | | |
| Cys | Val | Ala | Tyr | Tyr | Arg | Val | Asp | Glu | Asp | Arg | Glu | Glu | Leu | Arg | Arg |
| | | | | 195 | | | | | | | | | | | |
| Gly | Gly | | | | | | | | | | | | | | |
| | | 210 | | | | | | | | | | | | | |

```
<210> 25
<211> 210
<212> PRT
<213> Solanum tuberosum
```

```

<400> 25
Asp Ala Ser Pro Val Val Asp Ala Gly Ile Ala Leu Asp Lys Met Ile
1          5          10          15
His Phe Phe Thr Met Ala Leu Gly Gly Glu Gly Tyr Leu Asn Phe Met
          20          25          30
Gly Asn Glu Phe Gly His Pro Glu Trp Ile Asp Phe Pro Ser Glu Gly
          35          40          45
Asn Asn Trp Ser Tyr Asp Lys Cys Arg Arg Gln Trp Asn Leu Ala Asp
          50          55          60
Ser Glu His Leu Arg Tyr Lys Phe Met Asn Ala Phe Asp Arg Ala Met
65          70          75          80
Asn Ser Leu Asp Glu Lys Phe Ser Phe Leu Ala Ser Gly Lys Gln Ile
          85          90          95

```

Val Ser Ser Met Asp Asp Asp Asn Lys Val Val Val Phe Glu Arg Gly
 100 105 110

Asp Leu Val Phe Val Phe Asn Phe His Pro Asn Asn Thr Tyr Glu Gly
 115 120 125

Tyr Lys Val Gly Cys Asp Leu Pro Gly Lys Tyr Arg Val Ala Leu Asp
 130 135 140

Ser Asp Ala Trp Glu Phe Gly Gly His Gly Arg Ala Gly His Asp Val
 145 150 155 160

Asp His Phe Thr Ser Pro Glu Gly Ile Pro Gly Val Pro Glu Thr Asn
 165 170 175

Phe Asn Gly Arg Pro Asn Ser Phe Lys Val Leu Ser Pro Ala Arg Thr
 180 185 190

Cys Val Ala Tyr Tyr Arg Val Asp Glu Arg Met Ser Glu Thr Glu Asp
 195 200 205

Tyr Gln
 210

<210> 26
 <211> 195
 <212> PRT
 <213> Homo sapiens

<400> 26
 Pro Phe Thr Pro Val Ile Asp Arg Gly Ile Gln Leu His Lys Met Ile
 1 5 10 15

Arg Leu Ile Thr His Gly Leu Gly Gly Glu Gly Tyr Leu Asn Phe Met
 20 25 30

Gly Asn Glu Phe Gly His Pro Glu Trp Leu Asp Phe Pro Arg Lys Gly
 35 40 45

Asn Asn Glu Ser Tyr His Tyr Ala Arg Arg Gln Phe His Leu Thr Asp
 50 55 60

Asp Asp Leu Leu Arg Tyr Lys Phe Leu Asn Asn Phe Asp Arg Asp Met
 65 70 75 80

Asn Arg Leu Glu Glu Arg Tyr Gly Trp Leu Ala Ala Pro Gln Ala Tyr
 85 90 95

Val Ser Glu Lys His Glu Gly Asn Lys Ile Ile Ala Phe Glu Arg Ala
 100 105 110

Gly Leu Leu Phe Ile Phe Asn Phe His Pro Ser Lys Ser Tyr Thr Asp
 115 120 125

Tyr Arg Val Gly Thr Ala Leu Pro Gly Lys Phe Lys Ile Val Leu Asp
 130 135 140

Ser Asp Ala Ala Glu Tyr Gly Gly His Gln Arg Leu Asp His Ser Thr
 145 150 155 160

Asp Phe Phe Ser Glu Ala Phe Glu His Asn Gly Arg Pro Tyr Ser Leu
 165 170 175

Leu Val Tyr Ile Pro Ser Arg Val Ala Leu Ile Leu Gln Asn Val Asp
 180 185 190

Leu Pro Asn
 195

<210> 27
 <211> 60
 <212> DNA
 <213> Homo sapiens

<400> 27
 ggctatctca atttcatggg taatgaattt gggcatcctg aatgggttaga cttcccaaga 60

<210> 28
 <211> 60
 <212> DNA
 <213> Lathyrus sp.

<400> 28
 gggatatttga attttatggg gaatgaattc ggacatcctg agtggatcga ttttccaagg 60

<210> 29
 <211> 60
 <212> DNA
 <213> Solanum tuberosum

<400> 29
 gggtagctca atttcatggg taacgagttt ggccatcctg agtggattga cttccctagt 60

<210> 30
 <211> 60
 <212> DNA
 <213> Zea mays

<400> 30
 ggctacttga attttatggg aaatgagttt ggtcacccag aatggattga ctttccaaga 60

<210> 31
 <211> 60
 <212> DNA
 <213> Zea mays

<400> 31
 ggctatcttta atttcatggg aaatgagttt ggacatcctg aatggataga tttccaaga 60

<210> 32
 <211> 60
 <212> DNA
 <213> Oryza sativa

<400> 32
 ggctacttaa attttatggg caatgagttt ggccatccag aatggattga cttccaaga 60

<210> 33
 <211> 692
 <212> PRT
 <213> Solanum tuberosum

<400> 33
 Ile Tyr Glu Ile Asp Pro Leu Leu Thr Asn Tyr Arg Gln His Leu Asp
 1 5 10 15
 Tyr Arg Tyr Ser Gln Tyr Lys Lys Leu Arg Glu Ala Ile Asp Lys Tyr
 20 25 30
 Glu Gly Gly Leu Glu Ala Phe Ser Arg Gly Tyr Glu Lys Met Gly Phe
 35 40 45
 Thr Arg Ser Ala Thr Gly Ile Thr Tyr Arg Glu Trp Ala Leu Gly Ala
 50 55 60
 Gln Ser Ala Ala Leu Ile Gly Asp Phe Asn Asn Trp Asp Ala Asn Ala
 65 70 75 80
 Asp Ile Met Thr Arg Asn Glu Phe Gly Val Trp Glu Ile Phe Leu Pro
 85 90 95
 Asn Asn Val Asp Gly Ser Pro Ala Ile Pro His Gly Ser Arg Val Lys
 100 105 110
 Ile Arg Met Asp Thr Pro Ser Gly Val Lys Asp Ser Ile Pro Ala Trp
 115 120 125
 Ile Asn Tyr Ser Leu Gln Leu Pro Asp Glu Ile Pro Tyr Asn Gly Ile
 130 135 140
 His Tyr Asp Pro Pro Glu Glu Arg Tyr Ile Phe Gln His Pro Arg
 145 150 155 160

| | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Pro | Lys | Lys | Pro | Lys | Ser | Leu | Arg | Ile | Tyr | Glu | Ser | His | Ile | Gly | Met | 165 | 170 | 175 |
| Ser | Ser | Pro | Glu | Pro | Lys | Ile | Asn | Ser | Tyr | Val | Asn | Phe | Arg | Asp | Glu | 180 | 185 | 190 |
| Val | Leu | Pro | Arg | Ile | Lys | Lys | Leu | Gly | Tyr | Asn | Ala | Leu | Gln | Ile | Met | 195 | 200 | 205 |
| Ala | Ile | Gln | Glu | His | Ser | Tyr | Tyr | Ala | Ser | Phe | Gly | Tyr | His | Val | Thr | 210 | 215 | 220 |
| Asn | Phe | Phe | Ala | Pro | Ser | Ser | Arg | Phe | Gly | Thr | Pro | Asp | Asp | Leu | Lys | 225 | 230 | 235 |
| Ser | Leu | Ile | Asp | Lys | Ala | His | Glu | Leu | Gly | Ile | Val | Val | Leu | Met | Asp | 245 | 250 | 255 |
| Ile | Val | His | Ser | His | Ala | Ser | Asn | Asn | Thr | Leu | Asp | Gly | Leu | Asn | Met | 260 | 265 | 270 |
| Phe | Asp | Cys | Thr | Asp | Ser | Cys | Tyr | Phe | His | Ser | Gly | Ala | Arg | Gly | Tyr | 275 | 280 | 285 |
| His | Trp | Met | Trp | Asp | Ser | Arg | Leu | Phe | Asn | Tyr | Gly | Asn | Trp | Glu | Val | 290 | 295 | 300 |
| Leu | Arg | Tyr | Leu | Leu | Ser | Asn | Ala | Arg | Trp | Trp | Leu | Asp | Ala | Phe | Lys | 305 | 310 | 315 |
| Phe | Asp | Gly | Phe | Arg | Phe | Asp | Gly | Val | Thr | Ser | Met | Met | Tyr | Ile | His | 325 | 330 | 335 |
| His | Gly | Leu | Ser | Val | Gly | Phe | Thr | Gly | Asn | Tyr | Glu | Glu | Tyr | Phe | Gly | 340 | 345 | 350 |
| Leu | Ala | Thr | Asp | Val | Asp | Ala | Val | Val | Tyr | Leu | Met | Leu | Val | Asn | Asp | 355 | 360 | 365 |
| Leu | Ile | His | Gly | Leu | Phe | Pro | Asp | Ala | Ile | Thr | Ile | Gly | Glu | Asp | Val | 370 | 375 | 380 |
| Ser | Gly | Met | Pro | Thr | Phe | Cys | Ile | Pro | Val | Gln | Glu | Gly | Gly | Val | Gly | 385 | 390 | 395 |
| Phe | Asp | Tyr | Arg | Leu | His | Met | Ala | Ile | Ala | Asp | Lys | Arg | Ile | Glu | Leu | 405 | 410 | 415 |
| Leu | Lys | Lys | Arg | Asp | Glu | Asp | Trp | Arg | Val | Gly | Asp | Ile | Val | His | Thr | 420 | 425 | 430 |
| Leu | Thr | Asn | Arg | Arg | Trp | Ser | Glu | Lys | Cys | Val | Ser | Tyr | Ala | Glu | Ser | 435 | 440 | 445 |

His Asp Gln Ala Leu Val Gly Asp Lys Thr Ile Ala Phe Trp Leu Met
 450 455 460
 Asp Lys Asp Met Tyr Asp Phe Met Ala Leu Asp Arg Pro Ser Thr Ser
 465 470 475 480
 Leu Ile Asp Arg Gly Ile Ala Leu His Lys Met Ile Arg Leu Val Thr
 485 490 495
 Met Gly Leu Gly Gly Glu Gly Tyr Leu Asn Phe Met Gly Asn Glu Phe
 500 505 510
 Gly His Pro Glu Trp Ile Asp Phe Pro Arg Ala Glu Gln His Leu Ser
 515 520 525
 Asp Gly Ser Val Ile Pro Gly Asn Gln Phe Ser Tyr Asp Lys Cys Arg
 530 535 540
 Arg Arg Phe Asp Leu Gly Asp Ala Glu Tyr Leu Arg Tyr Arg Gly Leu
 545 550 555 560
 Gln Glu Phe Asp Arg Pro Met Gln Tyr Leu Glu Asp Lys Tyr Glu Phe
 565 570 575
 Met Thr Ser Glu His Gln Phe Ile Ser Arg Lys Asp Glu Gly Asp Arg
 580 585 590
 Met Ile Val Phe Glu Lys Gly Asn Leu Val Phe Val Phe Asn Phe His
 595 600 605
 Trp Thr Lys Ser Tyr Ser Asp Tyr Arg Ile Ala Cys Leu Lys Pro Gly
 610 615 620
 Lys Tyr Lys Val Ala Leu Asp Ser Asp Asp Pro Leu Phe Gly Gly Phe
 625 630 635 640
 Gly Arg Ile Asp His Asn Ala Glu Tyr Phe Thr Phe Glu Gly Trp Tyr
 645 650 655
 Asp Asp Arg Pro Arg Ser Ile Met Val Tyr Ala Pro Cys Lys Thr Ala
 660 665 670
 Val Val Tyr Ala Leu Val Asp Lys Glu Glu Glu Glu Glu Glu Glu
 675 680 685
 Glu Glu Glu Val
 690

<210> 34
 <211> 695
 <212> PRT
 <213> Solanum tuberosum

<400> 34
 Leu Leu Asn Leu Asp Pro Thr Leu Glu Pro Tyr Leu Asp His Phe Arg
 1 5 10 15
 His Arg Met Lys Arg Tyr Val Asp Gln Lys Met Leu Ile Glu Lys Tyr
 20 25 30
 Glu Gly Pro Leu Glu Glu Phe Ala Gln Gly Tyr Leu Lys Phe Gly Phe
 35 40 45
 Asn Arg Glu Asp Gly Cys Ile Val Tyr Arg Glu Trp Ala Pro Ala Ala
 50 55 60
 Gln Glu Ala Glu Val Ile Gly Asp Phe Asn Gly Trp Asn Gly Ser Asn
 65 70 75 80
 His Met Met Glu Lys Asp Gln Phe Gly Val Trp Ser Ile Arg Ile Pro
 85 90 95
 Asp Val Asp Ser Lys Pro Val Ile Pro His Asn Ser Arg Val Lys Phe
 100 105 110
 Arg Phe Lys His Gly Asn Gly Val Trp Val Asp Arg Ile Pro Ala Trp
 115 120 125
 Ile Lys Tyr Ala Thr Ala Asp Ala Thr Lys Phe Ala Ala Pro Tyr Asp
 130 135 140
 Gly Val Tyr Trp Asp Pro Pro Pro Ser Glu Arg Tyr His Phe Lys Tyr
 145 150 155 160
 Pro Arg Pro Pro Lys Pro Arg Ala Pro Arg Ile Tyr Glu Ala His Val
 165 170 175
 Gly Met Ser Ser Ser Glu Pro Arg Val Asn Ser Tyr Arg Glu Phe Ala
 180 185 190
 Asp Asp Val Leu Pro Arg Ile Lys Ala Asn Asn Tyr Asn Thr Val Gln
 195 200 205
 Leu Met Ala Ile Met Glu His Ser Tyr Tyr Gly Ser Phe Gly Tyr His
 210 215 220
 Val Thr Asn Phe Phe Ala Val Ser Asn Arg Tyr Gly Asn Pro Glu Asp
 225 230 235 240
 Leu Lys Tyr Leu Ile Asp Lys Ala His Ser Leu Gly Leu Gln Val Leu
 245 250 255
 Val Asp Val Val His Ser His Ala Ser Asn Asn Val Thr Asp Gly Leu
 260 265 270
 Asn Gly Phe Asp Ile Gly Gln Gly Ser Gln Glu Ser Tyr Phe His Ala
 275 280 285

| | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gly | Glu | Arg | Gly | Tyr | His | Lys | Leu | Trp | Asp | Ser | Arg | Leu | Phe | Asn | Tyr | 290 | 295 | 300 | |
| Ala | Asn | Trp | Glu | Val | Leu | Arg | Phe | Leu | Leu | Ser | Asn | Leu | Arg | Trp | Trp | 305 | 310 | 315 | 320 |
| Leu | Glu | Glu | Tyr | Asn | Phe | Asp | Gly | Phe | Arg | Phe | Asp | Gly | Ile | Thr | Ser | 325 | 330 | 335 | |
| Met | Leu | Tyr | Val | His | His | Gly | Ile | Asn | Met | Gly | Phe | Thr | Gly | Asn | Tyr | 340 | 345 | 350 | |
| Asn | Glu | Tyr | Phe | Ser | Glu | Ala | Thr | Asp | Val | Asp | Ala | Val | Val | Tyr | Leu | 355 | 360 | 365 | |
| Met | Leu | Ala | Asn | Asn | Leu | Ile | His | Lys | Ile | Phe | Pro | Asp | Ala | Thr | Val | 370 | 375 | 380 | |
| Ile | Ala | Glu | Asp | Val | Ser | Gly | Met | Pro | Gly | Leu | Ser | Arg | Pro | Val | Ser | 385 | 390 | 395 | 400 |
| Glu | Gly | Gly | Ile | Gly | Phe | Asp | Tyr | Arg | Leu | Ala | Met | Ala | Ile | Pro | Asp | 405 | 410 | 415 | |
| Lys | Trp | Ile | Asp | Tyr | Leu | Lys | Asn | Lys | Asn | Asp | Glu | Asp | Trp | Ser | Met | 420 | 425 | 430 | |
| Lys | Glu | Val | Thr | Ser | Ser | Leu | Thr | Asn | Arg | Arg | Tyr | Thr | Glu | Lys | Cys | 435 | 440 | 445 | |
| Ile | Ala | Tyr | Ala | Glu | Ser | His | Asp | Gln | Ser | Ile | Val | Gly | Asp | Lys | Thr | 450 | 455 | 460 | |
| Ile | Ala | Phe | Leu | Leu | Met | Asp | Lys | Glu | Met | Tyr | Ser | Gly | Met | Ser | Cys | 465 | 470 | 475 | 480 |
| Leu | Thr | Asp | Ala | Ser | Pro | Val | Val | Asp | Arg | Gly | Ile | Ala | Leu | His | Lys | 485 | 490 | 495 | |
| Met | Ile | His | Phe | Phe | Thr | Met | Ala | Leu | Gly | Gly | Glu | Gly | Tyr | Leu | Asn | 500 | 505 | 510 | |
| Phe | Met | Gly | Asn | Glu | Phe | Gly | His | Pro | Glu | Trp | Ile | Asp | Phe | Pro | Arg | 515 | 520 | 525 | |
| Glu | Gly | Asn | Asn | Trp | Ser | Tyr | Asp | Lys | Cys | Arg | Arg | Gln | Trp | Asn | Leu | 530 | 535 | 540 | |
| Ala | Asp | Ser | Glu | His | Leu | Arg | Tyr | Lys | Phe | Met | Asn | Ala | Phe | Asp | Arg | 545 | 550 | 555 | 560 |
| Ala | Met | Asn | Ser | Leu | Asp | Glu | Lys | Phe | Ser | Phe | Leu | Ala | Ser | Gly | Lys | 565 | 570 | 575 | |

Gln Ile Val Ser Ser Met Asp Asp Asp Asn Lys Val Val Val Phe Glu
 580 585 590
 Arg Gly Asp Leu Val Phe Val Phe Asn Phe His Pro Asn Asn Thr Tyr
 595 600 605
 Glu Gly Tyr Lys Val Gly Cys Asp Leu Pro Gly Lys Tyr Arg Val Ala
 610 615 620
 Leu Gly Ser Asp Ala Trp Glu Phe Gly Gly His Gly Arg Ala Gly His
 625 630 635 640
 Asp Val Asp His Phe Thr Ser Pro Glu Gly Ile Pro Gly Val Pro Glu
 645 650 655
 Thr Asn Phe Asn Gly Arg Pro Asn Ser Phe Lys Val Leu Ser Pro Ala
 660 665 670
 Arg Thr Cys Val Ala Tyr Tyr Arg Val Asp Glu Arg Met Ser Glu Thr
 675 680 685
 Glu Asp Tyr Gln Thr Asp Ile
 690 695

<210> 35
 <211> 873
 <212> PRT
 <213> Solanum tuberosum

<400> 35
 Met Val Tyr Thr Leu Ser Gly Val Arg Phe Pro Thr Val Pro Ser Val
 1 5 10 15
 Tyr Lys Ser Asn Gly Phe Ser Ser Asn Gly Asp Arg Arg Asn Ala Asn
 20 25 30
 Val Ser Val Phe Leu Lys Lys His Ser Leu Ser Arg Lys Ile Leu Ala
 35 40 45
 Glu Lys Ser Ser Tyr Asn Ser Glu Phe Arg Pro Ser Thr Val Ala Ala
 50 55 60
 Ser Gly Lys Val Leu Val Pro Gly Thr Gln Ser Asp Ser Ser Ser Ser
 65 70 75 80
 Ser Thr Asp Gln Phe Glu Phe Thr Glu Thr Ser Pro Glu Asn Ser Pro
 85 90 95
 Ala Ser Thr Asp Val Asp Ser Ser Thr Met Glu His Ala Ser Gln Ile
 100 105 110

| | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Lys | Thr | Glu | Asn | Asp | Asp | Val | Glu | Pro | Ser | Ser | Asp | Leu | Thr | Gly | Ser | 115 | 120 | 125 | |
| Val | Glu | Glu | Leu | Asp | Phe | Ala | Ser | Ser | Leu | Gln | Leu | Gln | Glu | Gly | Gly | 130 | 135 | 140 | |
| Lys | Leu | Glu | Glu | Ser | Lys | Thr | Leu | Asn | Thr | Ser | Glu | Glu | Thr | Ile | Ile | 145 | 150 | 155 | 160 |
| Asp | Glu | Ser | Asp | Arg | Ile | Arg | Glu | Arg | Gly | Ile | Pro | Pro | Pro | Gly | Leu | 165 | 170 | 175 | |
| Gly | Gln | Lys | Ile | Tyr | Glu | Ile | Asp | Pro | Leu | Leu | Thr | Asn | Tyr | Arg | Gln | 180 | 185 | 190 | |
| His | Leu | Asp | Tyr | Arg | Tyr | Ser | Gln | Tyr | Lys | Lys | Leu | Arg | Glu | Ala | Ile | 195 | 200 | 205 | |
| Asp | Lys | Tyr | Glu | Gly | Gly | Leu | Glu | Ala | Phe | Ser | Arg | Gly | Tyr | Glu | Lys | 210 | 215 | 220 | |
| Met | Gly | Phe | Thr | Arg | Ser | Ala | Thr | Gly | Ile | Thr | Tyr | Arg | Glu | Trp | Ala | 225 | 230 | 235 | 240 |
| Leu | Gly | Ala | Gln | Ser | Ala | Ala | Leu | Ile | Gly | Asp | Phe | Asn | Asn | Trp | Asp | 245 | 250 | 255 | |
| Ala | Asn | Ala | Asp | Ile | Met | Thr | Arg | Asn | Glu | Phe | Gly | Val | Trp | Glu | Ile | 260 | 265 | 270 | |
| Phe | Leu | Pro | Asn | Asn | Val | Asp | Gly | Ser | Pro | Ala | Ile | Pro | His | Gly | Ser | 275 | 280 | 285 | |
| Arg | Val | Lys | Ile | Arg | Met | Asp | Thr | Pro | Ser | Gly | Val | Lys | Asp | Ser | Ile | 290 | 295 | 300 | |
| Pro | Ala | Trp | Ile | Asn | Tyr | Ser | Leu | Gln | Leu | Pro | Asp | Glu | Ile | Pro | Tyr | 305 | 310 | 315 | 320 |
| Asn | Gly | Ile | His | Tyr | Asp | Pro | Pro | Glu | Glu | Glu | Arg | Tyr | Ile | Phe | Gln | 325 | 330 | 335 | |
| His | Pro | Arg | Pro | Lys | Lys | Pro | Lys | Ser | Leu | Arg | Ile | Tyr | Glu | Ser | His | 340 | 345 | 350 | |
| Ile | Gly | Met | Ser | Ser | Pro | Glu | Pro | Lys | Ile | Asn | Ser | Tyr | Val | Asn | Phe | 355 | 360 | 365 | |
| Arg | Asp | Glu | Val | Leu | Pro | Arg | Ile | Lys | Lys | Leu | Gly | Tyr | Asn | Ala | Leu | 370 | 375 | 380 | |
| Gln | Ile | Met | Ala | Ile | Gln | Glu | His | Ser | Tyr | Tyr | Ala | Ser | Phe | Gly | Tyr | 385 | 390 | 395 | 400 |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| His | Val | Thr | Asn | Phe | Phe | Ala | Pro | Ser | Ser | Arg | Phe | Gly | Thr | Pro | Asp | |
| | | | | 405 | | | | | 410 | | | | | 415 | | |
| Asp | Leu | Lys | Ser | Leu | Ile | Asp | Lys | Ala | His | Glu | Leu | Gly | Ile | Val | Val | |
| | | | 420 | | | | | 425 | | | | | 430 | | | |
| Leu | Met | Asp | Ile | Val | His | Ser | His | Ala | Ser | Asn | Asn | Thr | Leu | Asp | Gly | |
| | | 435 | | | | | 440 | | | | | 445 | | | | |
| Leu | Asn | Met | Phe | Asp | Cys | Thr | Asp | Ser | Cys | Tyr | Phe | His | Ser | Gly | Ala | |
| | 450 | | | | | 455 | | | | | 460 | | | | | |
| Arg | Gly | Tyr | His | Trp | Met | Trp | Asp | Ser | Arg | Leu | Phe | Asn | Tyr | Gly | Asn | |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 | |
| Trp | Glu | Val | Leu | Arg | Tyr | Leu | Leu | Ser | Asn | Ala | Arg | Trp | Trp | Leu | Asp | |
| | | | | 485 | | | | | 490 | | | | | 495 | | |
| Ala | Phe | Lys | Phe | Asp | Gly | Phe | Arg | Phe | Asp | Gly | Val | Thr | Ser | Met | Met | |
| | | | 500 | | | | | 505 | | | | | 510 | | | |
| Tyr | Ile | His | His | Gly | Leu | Ser | Val | Gly | Phe | Thr | Gly | Asn | Tyr | Glu | Glu | |
| | 515 | | | | | | 520 | | | | | 525 | | | | |
| Tyr | Phe | Gly | Leu | Ala | Thr | Asp | Val | Asp | Ala | Val | Val | Tyr | Leu | Met | Leu | |
| | 530 | | | | | 535 | | | | | 540 | | | | | |
| Val | Asn | Asp | Leu | Ile | His | Gly | Leu | Phe | Pro | Asp | Ala | Ile | Thr | Ile | Gly | |
| 545 | | | | | 550 | | | | | 555 | | | | | 560 | |
| Glu | Asp | Val | Ser | Gly | Met | Pro | Thr | Phe | Cys | Ile | Pro | Val | Gln | Glu | Gly | |
| | | | | 565 | | | | | 570 | | | | | 575 | | |
| Gly | Val | Gly | Phe | Asp | Tyr | Arg | Leu | His | Met | Ala | Ile | Ala | Asp | Lys | Arg | |
| | | | 580 | | | | | 585 | | | | | 590 | | | |
| Ile | Glu | Leu | Leu | Lys | Lys | Arg | Asp | Glu | Asp | Trp | Arg | Val | Gly | Asp | Ile | |
| | 595 | | | | | | 600 | | | | | 605 | | | | |
| Val | His | Thr | Leu | Thr | Asn | Arg | Arg | Trp | Ser | Glu | Lys | Cys | Val | Ser | Tyr | |
| | 610 | | | | | 615 | | | | | 620 | | | | | |
| Ala | Glu | Ser | His | Asp | Gln | Ala | Leu | Val | Gly | Asp | Lys | Thr | Ile | Ala | Phe | |
| 625 | | | | | 630 | | | | | 635 | | | | | 640 | |
| Trp | Leu | Met | Asp | Lys | Asp | Met | Tyr | Asp | Phe | Met | Ala | Leu | Asp | Arg | Pro | |
| | | | | 645 | | | | | 650 | | | | | 655 | | |
| Ser | Thr | Ser | Leu | Ile | Asp | Arg | Gly | Ile | Ala | Leu | His | Lys | Met | Ile | Arg | |
| | | | 660 | | | | | 665 | | | | | 670 | | | |
| Leu | Val | Thr | Met | Gly | Leu | Gly | Gly | Glu | Gly | Tyr | Leu | Asn | Phe | Met | Gly | |
| | | 675 | | | | | 680 | | | | | 685 | | | | |

Asn Glu Phe Gly His Pro Glu Trp Ile Asp Phe Pro Arg Ala Glu Gln
 690 695 700
 His Leu Ser Asp Gly Ser Val Ile Pro Gly Asn Gln Phe Ser Tyr Asp
 705 710 715 720
 Lys Cys Arg Arg Arg Phe Asp Leu Gly Asp Ala Glu Tyr Leu Arg Tyr
 725 730 735
 Arg Gly Leu Gln Glu Phe Asp Arg Pro Met Gln Tyr Leu Glu Asp Lys
 740 745 750
 Tyr Glu Phe Met Thr Ser Glu His Gln Phe Ile Ser Arg Lys Asp Glu
 755 760 765
 Gly Asp Arg Met Ile Val Phe Glu Lys Gly Asn Leu Val Phe Val Phe
 770 775 780
 Asn Phe His Trp Thr Lys Ser Tyr Ser Asp Tyr Arg Ile Ala Cys Leu
 785 790 795 800
 Lys Pro Gly Lys Tyr Lys Val Ala Leu Asp Ser Asp Asp Pro Leu Phe
 805 810 815
 Gly Gly Phe Gly Arg Ile Asp His Asn Ala Glu Tyr Phe Thr Phe Glu
 820 825 830
 Gly Trp Tyr Asp Asp Arg Pro Arg Ser Ile Met Val Tyr Ala Pro Cys
 835 840 845
 Lys Thr Ala Val Val Tyr Ala Leu Val Asp Lys Glu Glu Glu Glu Glu
 850 855 860
 Glu Glu Glu Glu Glu Glu Val Ala Ala
 865 870

<210> 36
 <211> 861
 <212> PRT
 <213> Lathyrus sp.

<400> 36
 Met Val Tyr Thr Ile Ser Gly Ile Arg Phe Pro Val Leu Pro Ser Leu
 1 5 10 15
 His Lys Ser Thr Leu Arg Cys Asp Arg Arg Ala Ser Ser His Ser Phe
 20 25 30
 Phe Leu Lys Asn Asn Ser Ser Ser Phe Ser Arg Thr Ser Leu Tyr Ala
 35 40 45
 Lys Phe Ser Arg Asp Ser Glu Thr Lys Ser Ser Thr Ile Ala Glu Ser
 50 55 60

| | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Lys | Val | Leu | Ile | Pro | Glu | Asp | Gln | Asp | Asn | Ser | Val | Ser | Leu | Ala | 65 | 70 | 75 | 80 |
| Asp | Gln | Leu | Glu | Asn | Pro | Asp | Ile | Thr | Ser | Glu | Asp | Ala | Gln | Asn | Leu | 85 | 90 | 95 | |
| Glu | Asp | Leu | Thr | Met | Lys | Asp | Gly | Asn | Lys | Tyr | Asn | Ile | Asp | Glu | Ser | 100 | 105 | 110 | |
| Thr | Ser | Ser | Tyr | Arg | Glu | Val | Gly | Asp | Glu | Lys | Gly | Ser | Val | Thr | Ser | 115 | 120 | 125 | |
| Ser | Ser | Leu | Val | Asp | Val | Asn | Thr | Asp | Thr | Gln | Ala | Lys | Lys | Thr | Ser | 130 | 135 | 140 | |
| Val | His | Ser | Asp | Lys | Lys | Val | Lys | Val | Asp | Lys | Pro | Lys | Ile | Ile | Pro | 145 | 150 | 155 | 160 |
| Pro | Pro | Gly | Ser | Gly | Gln | Lys | Ile | Tyr | Glu | Ile | Asp | Pro | Leu | Leu | Gln | 165 | 170 | 175 | |
| Ala | His | Arg | Gln | His | Leu | Asp | Phe | Arg | Tyr | Gly | Gln | Tyr | Lys | Arg | Ile | 180 | 185 | 190 | |
| Arg | Glu | Glu | Ile | Asp | Lys | Tyr | Glu | Gly | Gly | Leu | Asp | Ala | Phe | Ser | Arg | 195 | 200 | 205 | |
| Gly | Tyr | Glu | Lys | Phe | Gly | Phe | Thr | Arg | Ser | Ala | Thr | Gly | Ile | Thr | Tyr | 210 | 215 | 220 | |
| Arg | Glu | Trp | Gly | Pro | Gly | Ala | Lys | Ser | Ala | Ala | Leu | Val | Gly | Asp | Phe | 225 | 230 | 235 | 240 |
| Asn | Asn | Trp | Asn | Pro | Asn | Ala | Asp | Val | Met | Thr | Lys | Asp | Ala | Phe | Gly | 245 | 250 | 255 | |
| Val | Trp | Glu | Ile | Phe | Leu | Pro | Asn | Asn | Ala | Asp | Gly | Ser | Pro | Pro | Ile | 260 | 265 | 270 | |
| Pro | His | Gly | Ser | Arg | Val | Lys | Ile | His | Met | Asp | Thr | Pro | Ser | Gly | Ile | 275 | 280 | 285 | |
| Lys | Asp | Ser | Ile | Pro | Ala | Trp | Ile | Lys | Phe | Ser | Val | Gln | Ala | Pro | Gly | 290 | 295 | 300 | |
| Glu | Ile | Pro | Tyr | Asn | Gly | Ile | Tyr | Tyr | Asp | Pro | Pro | Glu | Glu | Glu | Lys | 305 | 310 | 315 | 320 |
| Tyr | Val | Phe | Lys | His | Pro | Gln | Pro | Lys | Arg | Pro | Gln | Ser | Ile | Arg | Ile | 325 | 330 | 335 | |
| Tyr | Glu | Ser | His | Ile | Gly | Met | Ser | Ser | Pro | Glu | Pro | Lys | Ile | Asn | Thr | 340 | 345 | 350 | |

Tyr Ala Asn Phe Arg Asp Asp Val Leu Pro Arg Ile Lys Lys Leu Gly
 355 360 365
 Tyr Asn Ala Val Gln Ile Met Ala Ile Gln Glu His Ser Tyr Tyr Ala
 370 375 380
 Ser Phe Gly Tyr His Val Thr Asn Phe Phe Ala Pro Ser Ser Arg Phe
 385 390 395 400
 Gly Thr Pro Glu Asp Leu Lys Ser Leu Ile Asp Arg Ala His Glu Leu
 405 410 415
 Gly Leu Leu Val Leu Met Asp Ile Val His Ser His Ser Ser Asn Asn
 420 425 430
 Thr Leu Asp Gly Leu Asn Met Phe Asp Gly Thr Asp Gly His Tyr Phe
 435 440 445
 His Pro Gly Ser Arg Gly Tyr His Trp Met Trp Asp Ser Arg Leu Phe
 450 455 460
 Asn Tyr Gly Ser Trp Glu Val Leu Arg Tyr Leu Leu Ser Asn Ala Arg
 465 470 475 480
 Trp Trp Leu Asp Glu Tyr Lys Phe Asp Gly Phe Arg Phe Asp Gly Val
 485 490 495
 Thr Ser Met Met Tyr Thr His His Gly Leu Gln Val Ser Phe Thr Gly
 500 505 510
 Asn Tyr Ser Glu Tyr Phe Gly Leu Ala Thr Asp Val Glu Ala Val Val
 515 520 525
 Tyr Met Met Leu Val Asn Asp Leu Ile His Gly Leu Phe Pro Glu Ala
 530 535 540
 Val Ser Ile Gly Glu Asp Val Ser Gly Met Pro Thr Phe Cys Leu Pro
 545 550 555 560
 Thr Gln Asp Gly Gly Ile Gly Phe Asn Tyr Arg Leu His Met Ala Val
 565 570 575
 Ala Asp Lys Trp Ile Glu Leu Leu Lys Lys Gln Asp Glu Asp Trp Arg
 580 585 590
 Met Gly Asp Ile Val His Thr Leu Thr Asn Arg Arg Trp Leu Glu Lys
 595 600 605
 Cys Val Val Tyr Ala Glu Ser His Asp Gln Ala Leu Val Gly Asp Lys
 610 615 620
 Thr Leu Ala Phe Trp Leu Met Asp Lys Asp Met Tyr Asp Phe Met Ala
 625 630 635 640

Leu Asp Arg Pro Ser Thr Pro Leu Ile Asp Arg Gly Ile Ala Leu His
 645 650 655
 Lys Met Ile Arg Leu Ile Thr Met Gly Leu Gly Gly Glu Gly Tyr Leu
 660 665 670
 Asn Phe Met Gly Asn Glu Phe Gly His Pro Glu Trp Ile Asp Phe Pro
 675 680 685
 Arg Gly Glu Gln His Leu Pro Asn Gly Lys Ile Val Pro Gly Asn Asn
 690 695 700
 Asn Ser Tyr Asp Lys Cys Arg Arg Arg Phe Asp Leu Gly Asp Ala Asp
 705 710 715 720
 Tyr Leu Arg Tyr His Gly Met Gln Glu Phe Asp Arg Ala Met Gln His
 725 730 735
 Leu Glu Glu Thr Tyr Gly Phe Met Thr Ser Glu His Gln Tyr Ile Ser
 740 745 750
 Arg Lys Asn Glu Gly Asp Arg Val Ile Ile Phe Glu Arg Asp Asn Leu
 755 760 765
 Val Phe Val Phe Asn Phe His Trp Thr Asn Ser Tyr Ser Asp Tyr Lys
 770 775 780
 Val Gly Cys Leu Lys Pro Gly Lys Tyr Lys Ile Val Leu Asp Ser Asp
 785 790 795 800
 Asp Thr Leu Phe Gly Gly Phe Asn Arg Leu Asn His Thr Ala Glu Tyr
 805 810 815
 Phe Thr Ser Glu Gly Trp Tyr Asp Asp Arg Pro Arg Ser Phe Leu Val
 820 825 830
 Tyr Ala Pro Ser Arg Thr Ala Val Val Tyr Ala Leu Ala Asp Gly Val
 835 840 845
 Glu Ser Glu Pro Ile Glu Leu Ser Asp Gly Val Glu Ser
 850 855 860

<210> 37
 <211> 2531
 <212> DNA
 <213> Solanum tuberosum

<220>
 <221> CDS
 <222> (5) .. (2530)

<220>

<221> modified_base
 <222> (2492)..(2492)
 <223> a, c, g, t, other or unknown

<220>
 <221> modified_base
 <222> (2499)..(2499)
 <223> a, c, g, t, other or unknown

<220>
 <221> modified_base
 <222> (2516)..(2516)
 <223> a, c, g, t, other or unknown

<220>
 <221> modified_base
 <222> (2520)..(2521)
 <223> a, c, g, t, other or unknown

<400> 37
 ggat gct aat gtt tct gta ttc ttg aaa aag cac tct ctt tca cgg aag 49
 Ala Asn Val Ser Val Phe Leu Lys Lys His Ser Leu Ser Arg Lys
 1 5 10 15

atc ttg gct gaa aag tct tct tac aat tcc gaa tcc cga cct tct aca 97
 Ile Leu Ala Glu Lys Ser Ser Tyr Asn Ser Glu Ser Arg Pro Ser Thr
 20 25 30

gtt gca gca tcg ggg aaa gtc ctt gtg cct gga ayc cag agt gat agc 145
 Val Ala Ala Ser Gly Lys Val Leu Val Pro Gly Xaa Gln Ser Asp Ser
 35 40 45

tcc tca tcc tca aca gac caa ttt gag ttc act gag aca tct cca gaa 193
 Ser Ser Ser Ser Thr Asp Gln Phe Glu Phe Thr Glu Thr Ser Pro Glu
 50 55 60

aat tcc cca gca tca act gat gta gat agt tca aca atg gaa cac gct 241
 Asn Ser Pro Ala Ser Thr Asp Val Asp Ser Ser Thr Met Glu His Ala
 65 70 75

agc cag att aaa act gag aac gat gac gtt gag ccg tca agt gat ctt 289
 Ser Gln Ile Lys Thr Glu Asn Asp Asp Val Glu Pro Ser Ser Asp Leu
 80 85 90 95

aca gga agt gtt gaa gag ctg gat ttt gct tca tca cta caa cta caa 337
 Thr Gly Ser Val Glu Glu Leu Asp Phe Ala Ser Ser Leu Gln Leu Gln
 100 105 110

gaa ggt ggt aaa ctg gag gag tct aaa aca tta aat act tct gaa gag 385
 Glu Gly Gly Lys Leu Glu Glu Ser Lys Thr Leu Asn Thr Ser Glu Glu
 115 120 125

aca att att gat gaa tct gat agg atc aga gag agg ggc atc cct cca 433
 Thr Ile Ile Asp Glu Ser Asp Arg Ile Arg Glu Arg Gly Ile Pro Pro

| 130 | 135 | 140 | |
|---|-----|-----|------|
| cct gga ctt ggt cag aag att tat gaa ata gac ccc ctt ttg aca aac Pro Gly Leu Gly Gln Lys Ile Tyr Glu Ile Asp Pro Leu Leu Thr Asn 145 150 155 | | | 481 |
| tat cgt caa cac ctt gat tac agg tat tca cag tac aag aaa ctg agg Tyr Arg Gln His Leu Asp Tyr Arg Tyr Ser Gln Tyr Lys Lys Leu Arg 160 165 170 175 | | | 529 |
| gag gca att gac aag tat gag ggt ggt ttg gaa gct ttt tct cgt ggt Glu Ala Ile Asp Lys Tyr Glu Gly Gly Leu Glu Ala Phe Ser Arg Gly 180 185 190 | | | 577 |
| tat gaa aaa atg ggt ttc act cgt agt gct aca ggt atc act tac cgt Tyr Glu Lys Met Gly Phe Thr Arg Ser Ala Thr Gly Ile Thr Tyr Arg 195 200 205 | | | 625 |
| gag tgg gct cct ggt gcc cag tca gct gcc ctc att gga gat ttc aac Glu Trp Ala Pro Gly Ala Gln Ser Ala Ala Leu Ile Gly Asp Phe Asn 210 215 220 | | | 673 |
| aat tgg gac gca aat gct gac att atg act cgg aat gaa ttt ggt gtc Asn Trp Asp Ala Asn Ala Asp Ile Met Thr Arg Asn Glu Phe Gly Val 225 230 235 | | | 721 |
| tgg gag att ttt ctg cca aat aat gtg gat ggt tct cct gca att cct Trp Glu Ile Phe Leu Pro Asn Asn Val Asp Gly Ser Pro Ala Ile Pro 240 245 250 255 | | | 769 |
| cat ggg tcc aga gtg aag ata cgy atg gac act cca tca ggt gtt aag His Gly Ser Arg Val Lys Ile Arg Met Asp Thr Pro Ser Gly Val Lys 260 265 270 | | | 817 |
| gat tcc att cct gct tgg atc aac tac tct tta cag ctt cct gat gaa Asp Ser Ile Pro Ala Trp Ile Asn Tyr Ser Leu Gln Leu Pro Asp Glu 275 280 285 | | | 865 |
| att cca tat aat gga ata tat tat gat cca ccc gaa gag gag agg tat Ile Pro Tyr Asn Gly Ile Tyr Tyr Asp Pro Pro Glu Glu Glu Arg Tyr 290 295 300 | | | 913 |
| rtc ttc caa cac cca cgg cca aag aaa cca aag tcg ctg aga ata tat Xaa Phe Gln His Pro Arg Pro Lys Lys Pro Lys Ser Leu Arg Ile Tyr 305 310 315 | | | 961 |
| gaa tct cat att gga atg agt agt ccg gag cct aaa att aac tca tac Glu Ser His Ile Gly Met Ser Ser Pro Glu Pro Lys Ile Asn Ser Tyr 320 325 330 335 | | | 1009 |
| gtg aat ttt aga gat gaa gtt ctt cct cgc ata aaa aas ctt ggg tac Val Asn Phe Arg Asp Glu Val Leu Pro Arg Ile Lys Xaa Leu Gly Tyr 340 345 350 | | | 1057 |

| | |
|---|------|
| aat gcg gtg caa att atg gct att caa gag cat tct tat tat gct agt | 1105 |
| Asn Ala Val Gln Ile Met Ala Ile Gln Glu His Ser Tyr Tyr Ala Ser | |
| 355 360 365 | |
| ttt ggt tat cat gtc aca aat ttt ttt gca cca agc agc cgt ttt gga | 1153 |
| Phe Gly Tyr His Val Thr Asn Phe Phe Ala Pro Ser Ser Arg Phe Gly | |
| 370 375 380 | |
| acg ccc gac gac ctt aag tct ttg att gat aaa gct cat gag cta gga | 1201 |
| Thr Pro Asp Asp Leu Lys Ser Leu Ile Asp Lys Ala His Glu Leu Gly | |
| 385 390 395 | |
| att gtt gtt ctc atg gac att gtt cac agc cat gca tca aat aat act | 1249 |
| Ile Val Val Leu Met Asp Ile Val His Ser His Ala Ser Asn Asn Thr | |
| 400 405 410 415 | |
| tta gat gga ctg aac atg ttt gac ggc aca gat agt tgt tac ttt cac | 1297 |
| Leu Asp Gly Leu Asn Met Phe Asp Gly Thr Asp Ser Cys Tyr Phe His | |
| 420 425 430 | |
| tct gga gct cgt ggt tat cat tgg atg tgg gat tcc cgc ctc ttt aac | 1345 |
| Ser Gly Ala Arg Gly Tyr His Trp Met Trp Asp Ser Arg Leu Phe Asn | |
| 435 440 445 | |
| tat gga aac tgg gag gta ctt agg tat ctt ctc tca aat gcg aga tgg | 1393 |
| Tyr Gly Asn Trp Glu Val Leu Arg Tyr Leu Leu Ser Asn Ala Arg Trp | |
| 450 455 460 | |
| tgg ttg gat gag ttc aaa ttt gat gga ttt aga ttt gat ggt gtg aca | 1441 |
| Trp Leu Asp Glu Phe Lys Phe Asp Gly Phe Arg Phe Asp Gly Val Thr | |
| 465 470 475 | |
| tca atg atg tat act cac cac gga tta tcg gtg gga ttc act ggg aac | 1489 |
| Ser Met Met Tyr Thr His His Gly Leu Ser Val Gly Phe Thr Gly Asn | |
| 480 485 490 495 | |
| tac gag gaa tac ttt gga ctc gca act gat gtg gat gct gtt gtg tat | 1537 |
| Tyr Glu Glu Tyr Phe Gly Leu Ala Thr Asp Val Asp Ala Val Val Tyr | |
| 500 505 510 | |
| ctg atg ctg gtc aac gat ctt att cac ggg ctt ttc cca gat gca att | 1585 |
| Leu Met Leu Val Asn Asp Leu Ile His Gly Leu Phe Pro Asp Ala Ile | |
| 515 520 525 | |
| acc att ggt gaa gat gtt agc gga atg ccg aca ttt tgt att ccc gtt | 1633 |
| Thr Ile Gly Glu Asp Val Ser Gly Met Pro Thr Phe Cys Ile Pro Val | |
| 530 535 540 | |
| caa gat ggg ggt gtt ggc ttt gac tat cgg ctg cat atg gca att gct | 1681 |
| Gln Asp Gly Gly Val Gly Phe Asp Tyr Arg Leu His Met Ala Ile Ala | |
| 545 550 555 | |
| gat aaa tgg att gag ttg ctc aag aaa cgg gat gag gat tgg aga gtg | 1729 |
| Asp Lys Trp Ile Glu Leu Leu Lys Lys Arg Asp Glu Asp Trp Arg Val | |

| 560 | 565 | 570 | 575 | |
|---|-----|-----|-----|------|
| ggt gat att gtt cat aca ctg aca aat aga aga tgg tcg gaa aag tgt | | | | 1777 |
| Gly Asp Ile Val His Thr Leu Thr Asn Arg Arg Trp Ser Glu Lys Cys | 580 | 585 | 590 | |
| gtt tca tmc gct gaa agt cat gat caa gct cta gtc ggt gat aaa act | | | | 1825 |
| Val Ser Xaa Ala Glu Ser His Asp Gln Ala Leu Val Gly Asp Lys Thr | 595 | 600 | 605 | |
| ata gca tyc tgg ctg atg gac aag gat atg tat gat ttt atg gct ctg | | | | 1873 |
| Ile Ala Xaa Trp Leu Met Asp Lys Asp Met Tyr Asp Phe Met Ala Leu | 610 | 615 | 620 | |
| gat aga ccg tca aca tca tta ata gat cgt ggg ata gca ttg cac aag | | | | 1921 |
| Asp Arg Pro Ser Thr Ser Leu Ile Asp Arg Gly Ile Ala Leu His Lys | 625 | 630 | 635 | |
| atg att agg ctt gta act atg gga tta gga gga gaa ggg tac cta aat | | | | 1969 |
| Met Ile Arg Leu Val Thr Met Gly Leu Gly Gly Glu Gly Tyr Leu Asn | 640 | 645 | 650 | 655 |
| ttc atg gga aat gaa ttc ggc cac cct gag tgg att gat ttc cct agg | | | | 2017 |
| Phe Met Gly Asn Glu Phe Gly His Pro Glu Trp Ile Asp Phe Pro Arg | 660 | 665 | 670 | |
| gct gar caa cac ctc tct gat ggc tca gta att ccc gga aac caa ttc | | | | 2065 |
| Ala Glu Gln His Leu Ser Asp Gly Ser Val Ile Pro Gly Asn Gln Phe | 675 | 680 | 685 | |
| agt tat gat aaa tgc aga cgg aga ttt gac ctg gga gat gca gaa tat | | | | 2113 |
| Ser Tyr Asp Lys Cys Arg Arg Arg Phe Asp Leu Gly Asp Ala Glu Tyr | 690 | 695 | 700 | |
| tta aga tac cat ggg ttg caa gaa ttt gac cgg gct atg cag tat ctt | | | | 2161 |
| Leu Arg Tyr His Gly Leu Gln Glu Phe Asp Arg Ala Met Gln Tyr Leu | 705 | 710 | 715 | |
| gaa gat aaa tat gag ttt atg act tca gaa cac cag ttc ata tca cga | | | | 2209 |
| Glu Asp Lys Tyr Glu Phe Met Thr Ser Glu His Gln Phe Ile Ser Arg | 720 | 725 | 730 | 735 |
| aag gat gaa gga gat agg atg att gta ttt gaa ara gga aac cta gtt | | | | 2257 |
| Lys Asp Glu Gly Asp Arg Met Ile Val Phe Glu Xaa Gly Asn Leu Val | 740 | 745 | 750 | |
| ttt gtc ttt aat ttt cac tgg aca aat agc tat tca gac tat cgc ata | | | | 2305 |
| Phe Val Phe Asn Phe His Trp Thr Asn Ser Tyr Ser Asp Tyr Arg Ile | 755 | 760 | 765 | |
| ggc tgc ctg aag cct gga aaa tac aag gtt ggc ttg gac tca gat gat | | | | 2353 |
| Gly Cys Leu Lys Pro Gly Lys Tyr Lys Val Gly Leu Asp Ser Asp Asp | 770 | 775 | 780 | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| cca | ctt | ttt | ggt | ggc | ttc | ggg | aga | att | gat | cat | aat | gcc | gaa | tat | ttc | 2401 |
| Pro | Leu | Phe | Gly | Gly | Phe | Gly | Arg | Ile | Asp | His | Asn | Ala | Glu | Tyr | Phe | |
| | 785 | | | | | 790 | | | | | 795 | | | | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| acc | tct | gaa | gga | tcg | tat | gat | gat | cgy | ccy | cgy | yca | att | atg | gtg | tat | 2449 |
| Thr | Ser | Glu | Gly | Ser | Tyr | Asp | Asp | Arg | Pro | Arg | Xaa | Ile | Met | Val | Tyr | |
| 800 | | | | | 805 | | | | | 810 | | | | | 815 | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| gca | cct | agt | aga | aca | gca | gtg | gtc | tat | gca | cta | gta | gac | aaa | nta | gaa | 2497 |
| Ala | Pro | Ser | Arg | Thr | Ala | Val | Val | Tyr | Ala | Leu | Val | Asp | Lys | Xaa | Glu | |
| | | | | 820 | | | | | 825 | | | | | | 830 | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|--|--|--|--|------|
| gna | gaa | gaa | gaa | gaa | gaa | ncc | gnn | gaa | gaa | ttt | t | | | | | 2531 |
| Xaa | Glu | Glu | Glu | Glu | Glu | Xaa | Xaa | Glu | Glu | Phe | | | | | | |
| | | | 835 | | | | | 840 | | | | | | | | |

<210> 38
 <211> 842
 <212> PRT
 <213> Solanum tuberosum

<220>
 <221> MOD_RES
 <222> (43)..(43)
 <223> Thr or Ile

<220>
 <221> MOD_RES
 <222> (304)..(304)
 <223> Val or Ile

<220>
 <221> MOD_RES
 <222> (348)..(348)
 <223> Lys or Asn

<220>
 <221> MOD_RES
 <222> (594)..(594)
 <223> Tyr or Ser

<220>
 <221> MOD_RES
 <222> (610)..(610)
 <223> Ser or Phe

<220>
 <221> MOD_RES
 <222> (747)..(747)
 <223> Arg or Lys

<220>
 <221> MOD_RES

<222> (811)..(811)

<223> Pro or Ser

<220>

<221> MOD_RES

<222> (830)..(830)

<223> Ile, Val, or Leu

<220>

<221> MOD_RES

<222> (832)..(832)

<223> Glu, Gly, Ala or Val

<220>

<221> MOD_RES

<222> (838)..(838)

<223> Thr, Ala, Pro or Ser

<220>

<221> MOD_RES

<222> (839)..(839)

<223> Glu, Asp, Gly, Ala or Val

<400> 38

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Asn | Val | Ser | Val | Phe | Leu | Lys | Lys | His | Ser | Leu | Ser | Arg | Lys | Ile |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Ala | Glu | Lys | Ser | Ser | Tyr | Asn | Ser | Glu | Ser | Arg | Pro | Ser | Thr | Val |
| | | | 20 | | | | | 25 | | | | | 30 | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Ala | Ser | Gly | Lys | Val | Leu | Val | Pro | Gly | Xaa | Gln | Ser | Asp | Ser | Ser |
| | | 35 | | | | | 40 | | | | | 45 | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ser | Ser | Ser | Thr | Asp | Gln | Phe | Glu | Phe | Thr | Glu | Thr | Ser | Pro | Glu | Asn |
| | 50 | | | | | 55 | | | | | 60 | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ser | Pro | Ala | Ser | Thr | Asp | Val | Asp | Ser | Ser | Thr | Met | Glu | His | Ala | Ser |
| 65 | | | | | 70 | | | | | 75 | | | | | 80 |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gln | Ile | Lys | Thr | Glu | Asn | Asp | Asp | Val | Glu | Pro | Ser | Ser | Asp | Leu | Thr |
| | | | | 85 | | | | | 90 | | | | | 95 | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| Gly | Ser | Val | Glu | Leu | Asp | Phe | Ala | Ser | Ser | Leu | Gln | Leu | Gln | Glu | |
| | | | 100 | | | | 105 | | | | | 110 | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gly | Gly | Lys | Leu | Glu | Glu | Ser | Lys | Thr | Leu | Asn | Thr | Ser | Glu | Glu | Thr |
| | | 115 | | | | | 120 | | | | | 125 | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ile | Ile | Asp | Glu | Ser | Asp | Arg | Ile | Arg | Glu | Arg | Gly | Ile | Pro | Pro | Pro |
| | 130 | | | | | 135 | | | | | 140 | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gly | Leu | Gly | Gln | Lys | Ile | Tyr | Glu | Ile | Asp | Pro | Leu | Leu | Thr | Asn | Tyr |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 |

| | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Arg | Gln | His | Leu | Asp | Tyr | Arg | Tyr | Ser | Gln | Tyr | Lys | Lys | Leu | Arg | Glu | 165 | 170 | 175 |
| Ala | Ile | Asp | Lys | Tyr | Glu | Gly | Gly | Leu | Glu | Ala | Phe | Ser | Arg | Gly | Tyr | 180 | 185 | 190 |
| Glu | Lys | Met | Gly | Phe | Thr | Arg | Ser | Ala | Thr | Gly | Ile | Thr | Tyr | Arg | Glu | 195 | 200 | 205 |
| Trp | Ala | Pro | Gly | Ala | Gln | Ser | Ala | Ala | Leu | Ile | Gly | Asp | Phe | Asn | Asn | 210 | 215 | 220 |
| Trp | Asp | Ala | Asn | Ala | Asp | Ile | Met | Thr | Arg | Asn | Glu | Phe | Gly | Val | Trp | 225 | 230 | 235 |
| Glu | Ile | Phe | Leu | Pro | Asn | Asn | Val | Asp | Gly | Ser | Pro | Ala | Ile | Pro | His | 245 | 250 | 255 |
| Gly | Ser | Arg | Val | Lys | Ile | Arg | Met | Asp | Thr | Pro | Ser | Gly | Val | Lys | Asp | 260 | 265 | 270 |
| Ser | Ile | Pro | Ala | Trp | Ile | Asn | Tyr | Ser | Leu | Gln | Leu | Pro | Asp | Glu | Ile | 275 | 280 | 285 |
| Pro | Tyr | Asn | Gly | Ile | Tyr | Tyr | Asp | Pro | Pro | Glu | Glu | Glu | Arg | Tyr | Xaa | 290 | 295 | 300 |
| Phe | Gln | His | Pro | Arg | Pro | Lys | Lys | Pro | Lys | Ser | Leu | Arg | Ile | Tyr | Glu | 305 | 310 | 315 |
| Ser | His | Ile | Gly | Met | Ser | Ser | Pro | Glu | Pro | Lys | Ile | Asn | Ser | Tyr | Val | 325 | 330 | 335 |
| Asn | Phe | Arg | Asp | Glu | Val | Leu | Pro | Arg | Ile | Lys | Xaa | Leu | Gly | Tyr | Asn | 340 | 345 | 350 |
| Ala | Val | Gln | Ile | Met | Ala | Ile | Gln | Glu | His | Ser | Tyr | Tyr | Ala | Ser | Phe | 355 | 360 | 365 |
| Gly | Tyr | His | Val | Thr | Asn | Phe | Phe | Ala | Pro | Ser | Ser | Arg | Phe | Gly | Thr | 370 | 375 | 380 |
| Pro | Asp | Asp | Leu | Lys | Ser | Leu | Ile | Asp | Lys | Ala | His | Glu | Leu | Gly | Ile | 385 | 390 | 395 |
| Val | Val | Leu | Met | Asp | Ile | Val | His | Ser | His | Ala | Ser | Asn | Asn | Thr | Leu | 405 | 410 | 415 |
| Asp | Gly | Leu | Asn | Met | Phe | Asp | Gly | Thr | Asp | Ser | Cys | Tyr | Phe | His | Ser | 420 | 425 | 430 |
| Gly | Ala | Arg | Gly | Tyr | His | Trp | Met | Trp | Asp | Ser | Arg | Leu | Phe | Asn | Tyr | 435 | 440 | 445 |

| | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gly | Asn | Trp | Glu | Val | Leu | Arg | Tyr | Leu | Leu | Ser | Asn | Ala | Arg | Trp | Trp | 450 | 455 | 460 | |
| Leu | Asp | Glu | Phe | Lys | Phe | Asp | Gly | Phe | Arg | Phe | Asp | Gly | Val | Thr | Ser | 465 | 470 | 475 | 480 |
| Met | Met | Tyr | Thr | His | His | Gly | Leu | Ser | Val | Gly | Phe | Thr | Gly | Asn | Tyr | 485 | 490 | 495 | |
| Glu | Glu | Tyr | Phe | Gly | Leu | Ala | Thr | Asp | Val | Asp | Ala | Val | Val | Tyr | Leu | 500 | 505 | 510 | |
| Met | Leu | Val | Asn | Asp | Leu | Ile | His | Gly | Leu | Phe | Pro | Asp | Ala | Ile | Thr | 515 | 520 | 525 | |
| Ile | Gly | Glu | Asp | Val | Ser | Gly | Met | Pro | Thr | Phe | Cys | Ile | Pro | Val | Gln | 530 | 535 | 540 | |
| Asp | Gly | Gly | Val | Gly | Phe | Asp | Tyr | Arg | Leu | His | Met | Ala | Ile | Ala | Asp | 545 | 550 | 555 | 560 |
| Lys | Trp | Ile | Glu | Leu | Leu | Lys | Lys | Arg | Asp | Glu | Asp | Trp | Arg | Val | Gly | 565 | 570 | 575 | |
| Asp | Ile | Val | His | Thr | Leu | Thr | Asn | Arg | Arg | Trp | Ser | Glu | Lys | Cys | Val | 580 | 585 | 590 | |
| Ser | Xaa | Ala | Glu | Ser | His | Asp | Gln | Ala | Leu | Val | Gly | Asp | Lys | Thr | Ile | 595 | 600 | 605 | |
| Ala | Xaa | Trp | Leu | Met | Asp | Lys | Asp | Met | Tyr | Asp | Phe | Met | Ala | Leu | Asp | 610 | 615 | 620 | |
| Arg | Pro | Ser | Thr | Ser | Leu | Ile | Asp | Arg | Gly | Ile | Ala | Leu | His | Lys | Met | 625 | 630 | 635 | 640 |
| Ile | Arg | Leu | Val | Thr | Met | Gly | Leu | Gly | Gly | Glu | Gly | Tyr | Leu | Asn | Phe | 645 | 650 | 655 | |
| Met | Gly | Asn | Glu | Phe | Gly | His | Pro | Glu | Trp | Ile | Asp | Phe | Pro | Arg | Ala | 660 | 665 | 670 | |
| Glu | Gln | His | Leu | Ser | Asp | Gly | Ser | Val | Ile | Pro | Gly | Asn | Gln | Phe | Ser | 675 | 680 | 685 | |
| Tyr | Asp | Lys | Cys | Arg | Arg | Arg | Phe | Asp | Leu | Gly | Asp | Ala | Glu | Tyr | Leu | 690 | 695 | 700 | |
| Arg | Tyr | His | Gly | Leu | Gln | Glu | Phe | Asp | Arg | Ala | Met | Gln | Tyr | Leu | Glu | 705 | 710 | 715 | 720 |
| Asp | Lys | Tyr | Glu | Phe | Met | Thr | Ser | Glu | His | Gln | Phe | Ile | Ser | Arg | Lys | 725 | 730 | 735 | |

Asp Glu Gly Asp Arg Met Ile Val Phe Glu Xaa Gly Asn Leu Val Phe
740 745 750

Val Phe Asn Phe His Trp Thr Asn Ser Tyr Ser Asp Tyr Arg Ile Gly
755 760 765

Cys Leu Lys Pro Gly Lys Tyr Lys Val Gly Leu Asp Ser Asp Asp Pro
770 775 780

Leu Phe Gly Gly Phe Gly Arg Ile Asp His Asn Ala Glu Tyr Phe Thr
785 790 795 800

Ser Glu Gly Ser Tyr Asp Asp Arg Pro Arg Xaa Ile Met Val Tyr Ala
805 810 815

Pro Ser Arg Thr Ala Val Val Tyr Ala Leu Val Asp Lys Xaa Glu Xaa
820 825 830

Glu Glu Glu Glu Glu Xaa Xaa Glu Glu Phe
835 840

<210> 39

<211> 3003

<212> DNA

<213> Solanum tuberosum

<400> 39

| | | | | | | |
|-------------|------------|-------------|------------|-------------|------------|------|
| gatggggcct | tgaactcagc | aatttgacac | tcagttagtt | acactgccat | cacttatcag | 60 |
| atctctat | tttctcttaa | ttccaaccaa | ggaatgaata | aaaagataga | tttgtaaaaa | 120 |
| ccctaaggag | agaagaagaa | agatggtgta | tacactctct | ggagttcggt | ttcctactgt | 180 |
| tccatcagtg | tacaaatcta | atggattcag | cagtaatggt | gatcggagga | atgctaatat | 240 |
| ttctgtattc | ttgaaaaaac | actctctttc | acggaagatc | ttggctgaaa | agtcttctta | 300 |
| caattccgaa | ttccgacctt | ctacaattgc | agcatcgggg | aaagtccttg | tgcttggaat | 360 |
| ccagagtgat | agctcctcat | cctcaacaga | tcaatttgag | ttcgctgaga | catctccaga | 420 |
| aaattcccca | gcatcaactg | atgtagatag | ttcaacaatg | gaacacgcta | gccagattaa | 480 |
| aactgagaac | gatgacgttg | agccgtcaag | tgatcttaca | ggaagtgttg | aagagctgga | 540 |
| ttttgcttca | tcactacaac | tacaagaagg | tggtaaactg | gaggagtcta | aaacattaaa | 600 |
| tactttctgaa | gagacaatta | ttgatgaatc | tgataggatc | agagagaggg | gcatccctcc | 660 |
| acctggactt | ggtcagaaga | tttatgaaat | agacccctt | ttgacaaact | atcgtcaaca | 720 |
| ccttgattac | aggtattcac | agtacaagaa | actgagggag | gcaattgaca | agtatgaggg | 780 |
| tggtttggaa | gctttttctc | gtggttatga | aagaatgggt | ttcactcgta | gtgctacagg | 840 |
| tatcacttac | cgtgagtggg | ctcctggtgc | ccagtcagct | gccctcattg | gggatttcaa | 900 |
| caattggggac | gcaaatgctg | actttatgac | tcggaatgaa | tttggtgtct | gagagatttt | 960 |
| tctgccaaat | aatgtggatg | gttctcctgc | aattcctcat | gggtccagag | tgaagatacg | 1020 |
| tatggacact | ccatcaggtg | ttaaggattc | cattcctgct | tggatcaact | actctttaca | 1080 |
| gcttctgat | gaaattccat | ataatggaat | atattatgat | ccacccgaag | aggagaggta | 1140 |
| tatcttccaa | caccacggc | caaagaaacc | aaagtcggtg | agaatatatg | aatctcatat | 1200 |
| tggaatgagt | agtccggagc | ctaaaattaa | ctcatacgtg | aatttttagag | atgaagttct | 1260 |
| tcctcgcata | aaaaaagctt | gggtacaatg | cggtgcaa | tatggctatt | caagagcatt | 1320 |
| cttattatgc | tagttttggt | tatcatgtca | caaatttttt | tgcaccaagc | agccgttttg | 1380 |
| gaacgcccga | cgaccttaag | tctttgattg | ataaagctca | tgagctagga | attgttggtc | 1440 |
| tcatggacat | tgttcacagc | catgcatcaa | ataatacttt | agatggactg | aacatgtttg | 1500 |
| acggcacaga | tagttgttac | tttcaactctg | gagctcgtgg | ttatcattgg | atgtgggatt | 1560 |

| | | | | | | |
|------------|------------|------------|------------|------------|------------|------|
| tccgcctctt | taactatgga | aactgggagg | tacttaggta | tcttctctca | aatgcgagat | 1620 |
| ggtggttggg | tgagttcaaa | tttgatggat | ttagatttga | tggtgtgaca | tcaatgatgt | 1680 |
| gtactcacca | cggattatcg | gtgggattca | ctgggaacta | cgaggaatac | tttggactcg | 1740 |
| caactgatgt | ggatgctgtt | gtgtatctga | tgctggtcaa | cgatcttatt | catgggcttt | 1800 |
| tcccagatgc | aattaccatt | ggtgaagatg | ttagcggaat | gccgacattt | tgtgttcccc | 1860 |
| ttcaagatgg | gggtgttggc | tttgactatc | ggctgcatat | ggcaattgct | gataaatgga | 1920 |
| ttgagttgct | caagaaacgg | gatgaggatt | ggagagtggg | tgatattggt | catacactga | 1980 |
| caaatagaag | atggtcggaa | aagtgtgttt | catacgtctg | aagtcatgat | caagctctag | 2040 |
| tcggtgataa | aactatagca | ttctggctga | tggacaagga | tatgtatgat | tttatggctc | 2100 |
| tggatagacc | gtcaacatca | ttaatagatc | gtgggatagc | attacacaag | atgattaggc | 2160 |
| ttgtaactat | gggattagga | ggagaagggg | acctaaattt | catgggaaat | gaattcggcc | 2220 |
| accctgagtg | gattgatttc | cctagggctg | aacaacacct | ctctgatggc | tcagtaattc | 2280 |
| ccagaaacca | attcagttat | gataaatgca | gacggagatt | tgacctggga | gatgcagaat | 2340 |
| atttaagata | ccgtgggttg | caagaatttg | accgggctat | gcagtatctt | gaagataaat | 2400 |
| atgagtttat | gacttcagaa | caccagttca | tatcacgaaa | ggatgaagga | gataggatga | 2460 |
| ttgtatttga | aaaaggaaac | ctagtttttg | tctttaattt | tcactggaca | aaaggctatt | 2520 |
| cagactatcg | cataggctgc | ctgaagcctg | gaaaatacaa | ggttgccctg | gactcagatg | 2580 |
| atccactttt | tggtggcttc | gggagaattg | atcataatgc | cgaatatttc | accttgaag | 2640 |
| gatggtagta | tgatcgtcct | cgttcaatta | tgggtgatgc | acctagtaga | acagcagtg | 2700 |
| tctatgcact | agtagacaaa | gaagaagaag | aaagaagaag | agtagcagta | gtagaagaag | 2760 |
| tagtagtaga | agaagaatga | acgaacttgt | gatcgcgttg | aaagatttga | acgccacata | 2820 |
| gagcttcttg | acgtatctgg | caatattgca | ttagtcttgg | cggaaatttc | tgtgacaaca | 2880 |
| ggtttgcaat | tctttccact | attagtagtg | caacgatata | cgcagagatg | aagtgttgaa | 2940 |
| caaaaacata | tgtaaaatcg | atgaatttat | gtcgaatgct | gggacgatcg | aattcctgca | 3000 |
| gcc | | | | | | 3003 |

<210> 40

<211> 2975

<212> DNA

<213> Solanum tuberosum

<400> 40

| | | | | | | |
|------------|------------|-------------|------------|-------------|-------------|------|
| ttgatggggc | ttgaactcag | caatttgaca | ctcagttagt | tacactccta | tcacttatca | 60 |
| gatctctatt | ttttctctta | attccaacca | ggggaatgaa | taaaaggata | gatttgtaaa | 120 |
| aaccctaagg | agagaagaag | aaagatgggtg | tataactctt | ctggagttcg | ttttcctact | 180 |
| gttccatcag | tgtacaaaac | taatggattc | agcagtaatg | gtgatcggag | gaatgctaata | 240 |
| gtttctgtat | tcttgaaaaa | gcactctctt | tcacggaaga | tcttggctga | aaagtcttct | 300 |
| tacaattccg | aattccgacc | ttctacagtt | gcagcatcgg | ggaaagtcct | tgtgcctgga | 360 |
| accagagtg | atagctcctc | atcctcaaca | gaccaatttg | agttcactga | gacatctcca | 420 |
| gaaaattccc | cagcatcaac | tgatgtagat | agttcaacaa | tggaacacgc | tagccagatt | 480 |
| aaaactgaga | acgatgacgt | tgagccgtca | agtgatctta | cagggaagtgt | tgaagagctg | 540 |
| gattttgctt | catcactaca | actacaagaa | ggtggtaaac | tggaggagtc | taaaacatta | 600 |
| aatacttctg | aagagacaat | tattgatgaa | tctgatagga | tcagagagag | gggcatccct | 660 |
| ccacctggac | ttggtcagaa | gatttatgaa | atagaccccc | ttttgacaaa | ctatcgtcaa | 720 |
| caccttgatt | acaggtattc | acagtacaag | aaactgaggg | aggcaattga | caagtatgag | 780 |
| ggtgggttgg | aagcttttct | cgtgggttatg | aaaaaatggg | tttcaactcg | agtgtacacg | 840 |
| gtatcactta | ccgtgagtg | gctcctgggtg | cccagtcagc | tgccctcatt | ggagatttca | 900 |
| acaattggga | cgcaaatgct | gacattatga | ctcggaatga | atttggtgtc | tgggagattt | 960 |
| ttctgccaaa | taatgtggat | ggttctcctg | caattcctca | tgggtccaga | gtgaagatac | 1020 |
| gtatggacac | tccatcaggt | gttaaggatt | ccattcctgc | ttggatcaac | tactctttac | 1080 |
| agcttcctga | tgaatttcca | tataatggaa | tatattatga | tccacccgaa | gaggagaggt | 1140 |
| atatcttcca | acaccacgg | caaagaaac | caaagtcgct | gagaatatat | gaatctcata | 1200 |
| ttggaatgag | tagtccggag | cctaaaatta | actcatacgt | gaattttaga | gatgaagtcc | 1260 |

| | | | | | | |
|-----------|-----------|-----------|-----------|------------|------------|------|
| ttcctcgc | aaaaaagc | gggtacaat | cgctgcga | tatggctatt | caagagcatt | 1320 |
| cttattat | tagttttg | tatcatgt | caaatTTTT | tgcaccaag | agccgtttt | 1380 |
| gaacgccc | cgacctta | tcttcgatt | ataaagct | tgagctag | attgttggt | 1440 |
| tcatggac | cgttcacag | catgcatca | ataatact | agatggact | aacatgttt | 1500 |
| acggcacc | tagttgtt | tttcaact | gagctcgt | ttatcatt | atgtgggatt | 1560 |
| ccgcctct | aactatgg | actgggagg | acttaggt | cttctctca | atgcgagat | 1620 |
| gtggttgg | gagttcaa | ttgatggat | tagattcga | ggtgtgac | caatgatgt | 1680 |
| tactcacc | ggattatcg | tgggattca | tgggaact | gaggaata | ttggactcg | 1740 |
| aactgatg | gatgctgt | tgtatctga | gctgggtca | gatcttatt | ataggcttt | 1800 |
| cccagatg | attaccatt | gtgaagat | tagcggaat | cgacatttt | gtattcccg | 1860 |
| tcaagatg | ggtgttgg | ttgactat | gctgcata | gcaattgct | ataaatgg | 1920 |
| tgagttgt | aagaaacg | atgaggatt | gagagtgg | gatattgtt | atacactga | 1980 |
| aaataga | tggtcgga | agtgtgttt | atacgctga | agtcatgat | aagctctag | 2040 |
| cggtgata | actatagc | tctggctga | ggacaagg | atgtatgat | ttatggctc | 2100 |
| ggatagacc | ccaacatc | taatagat | tgggatag | ttgcacaag | tgattaggc | 2160 |
| tgtaaact | ggattagg | gagaagggt | cctaaatt | atgggaaat | aattcggcc | 2220 |
| ccctgagt | attgatttc | ctagggct | gccacacct | tctgatgg | cagtaattc | 2280 |
| cggaaacca | ttcagttat | ataaatgc | acggagatt | gacctggg | atgcagaat | 2340 |
| tttaagata | catgggtt | aagaatttg | ctgggctat | cagtatctt | aagataaat | 2400 |
| tgagtttat | acttcagaa | accagttc | atcacgaa | gatgaagg | ataggatga | 2460 |
| tgtatttga | agaggaaac | tagttttcg | ctttaatt | cactggaca | atagctatt | 2520 |
| agactatcg | ataggctgc | tgaagcct | aaaataca | gttgtcttg | actcagatg | 2580 |
| tccactttt | ggtggcttc | ggagaatt | tcataatg | gaatatttc | cctctgaag | 2640 |
| atcgtagat | gatcgctc | gttcaatt | ggtgtatg | cctagtaga | cagcagtg | 2700 |
| ctatgcact | gtagacaa | tagaagtag | agtagtaga | gaaccatt | aagaatga | 2760 |
| gaacttgt | tcgcgttg | agatttga | gttacttgg | catccacat | gagcttctt | 2820 |
| acatcagtc | tggcggaat | gcatgtga | acaagggtt | cagttcttt | cactattagt | 2880 |
| agtccacc | tatacgca | gatgaagt | tgaacaa | tatgtaaaa | cgatgaatt | 2940 |
| atgtcgaat | ctgggacga | cgaattcct | cagcc | | | 2975 |

<210> 41
 <211> 3033
 <212> DNA
 <213> Solanum tuberosum

| | | | | | | |
|------------|-----------|-----------|-----------|----------|-----------|------|
| <400> 41 | | | | | | |
| ttgatgggg | cttgaact | gcaatttg | actcagtt | ttacactc | atcacttat | 60 |
| agatctct | tttttctc | aattcca | aaggaatg | taaaagg | gatttgtaa | 120 |
| aaccctaag | agagaaga | aaagatg | tatacact | ctggagt | ttttcctac | 180 |
| gttccatca | tgtacaa | taatggat | agcagtaa | gtgatcgg | gaatgcta | 240 |
| gtttctgt | tcttgaaaa | gcactctc | tcacgga | tcttggct | aaagtcttc | 300 |
| tacaattcc | aattccgac | ttctacag | gcagcatc | ggaaagtc | tgtgcctgg | 360 |
| accagagtg | atagctcct | atcctca | gaccaatt | agttcact | gacatctcc | 420 |
| gaaaattccc | cagcatca | tgatgtag | agttcaac | tggaaac | tagccagat | 480 |
| aaaactgag | acgatgac | tgagccgt | agtgatct | caggaa | tgaagagct | 540 |
| gattttgct | catcacta | actacaag | ggtggtaa | tggaggag | taaaacatt | 600 |
| aatacttct | aagagaca | tattgatg | tctgatag | tcagagag | gggcatcc | 660 |
| ccacctgg | ttggtcag | gatttatg | atagacccc | ttttgaca | ctatcgtca | 720 |
| caccttgat | acaggtatt | acagtaca | aaactgag | aggcaatt | caagtatga | 780 |
| ggtggtttg | aagccttt | tcgtggtt | gaaaaaat | gtttcact | tagtgctac | 840 |
| ggtatcact | accgtgag | ggctcttg | gcccagtc | ctgccctc | tggagattt | 900 |
| aacaattgg | acgcaa | tgacattat | actcggat | aatttggt | ctgggagat | 960 |
| tttctgcc | ataatgtg | tggttctc | gcaattcct | atgggtcc | agtgaagat | 1020 |

```

cgtatggaca ctccatcagg tgtaaggat tccattcctg cttggatcaa ctactcttta 1080
cagcttcctg atgaaattcc atataatgga atacattatg atccaccgga agaggagagg 1140
tatatcttcc aacacccacg gccaaagaaa ccaaagtcgc tgagaatata tgaatctcat 1200
attggaatga gtagtccgga gcctaaaatt aactcatacg tgaatttttag agatgaagtt 1260
cttcctcgca taaaaaagct tgggtacaat gcgctgcaaa ttatggctat tcaagagcat 1320
tcttattacg ctagtttttg ttatcatgtc acaaattttt ttgcaccaag cagccgtttt 1380
ggaacgcccc acgaccttaa gtctttgatt gataaagctc atgagctagg aattgttgtt 1440
ctcatggaca ttgttcacag ccatgcatca aataatactt tagatggact gaacatgttt 1500
gactgcaccg atagttgtta ctttcactct ggagctcgtg gttatcattg gatgtgggat 1560
tcccgcctct ttaactatgg aaactgggag gtacttaggt atcttctctc aaatgcgaga 1620
tgggtggttg atgcgttcaa atttgatgga tttagatttg atggtgtgac atcaatgatg 1680
tatattcacc acggattatc ggtgggattc actgggaact acgaggaata ctttggactc 1740
gcaactgatg tggatgctgt tgtgtatctg atgctggtca acgatcttat tcatgggctt 1800
ttcccagatg caattacat tggatgaagat gttagcggaa tgccgacatt ttgtattccc 1860
gtccaagagg ggggtgttgg ctttgactat cggctgcata tggcaattgc tgataaacgg 1920
attgagttgc tcaagaaacg ggatgaggat tggagagtgg gtgatattgt tcatacactg 1980
acaaatagaa gatggtcggg aaagtgtgtt tcatacgtg aaagtcatga tcaagctcta 2040
gtcggtgata aaactatagc attctggctg atggacaagg atatgtatga ttttatggct 2100
ctggatagac cgtcaacatc attaatagat cgtgggtag cattgcacaa gatgattagg 2160
cttgtaacta tgggattagg aggagaaggg tacctaaatt tcatgggaaa tgaattcggc 2220
caccctgagt ggattgattt ccctagggtc gaacaacacc tctctgatgg ctcatgaatc 2280
cccggaaacc aattcagtta tgataaatgc agacggagat ttgacctggg agatgcagaa 2340
tatttaagat accgtgggtt gcaagaattt gaccggccta tgcagtatct tgaagataaa 2400
tatgagttta tgacttcaga acaccagttc atatcacgaa aggatgaagg agataggatg 2460
attgtatttg aaaaaggaaa cctagttttt gtctttaatt ttcactggac aaaaagctat 2520
tcagactatc gcatagcctg cctgaagcct ggaaaataca aggttgacct ggactcagat 2580
gatccacttt ttggtggctt cgggagaatt gatcataatg ccgaatatat cacttttgaa 2640
ggatggtatg atgatcgctc tcgttcaatt atggtgtatg caccttgtaa aacagcagtg 2700
gtctatgcac tagtagacaa agaagaagaa gaagaagaag aagaagaaga agaagtagca 2760
gcagtagaag aagtagtagt agaagaagaa tgaacgaact tgtgatcgcg ttgaaagatt 2820
tgaacgctac atagagcttc ttgacgtatc tggcaatatt gcatcagtct tggcggaatt 2880
tcatgtgaca caaggtttgc aattctttcc actattagta gtgcaacgat atacgcagag 2940
atgaagtgct gaacaaacat atgtaaaatc gatgaattta tgtcgaatgc tgggacgatc 3000
gaattcctgc aggccggggg accccttagt tct 3033

```

<210> 42

<211> 847

<212> PRT

<213> Solanum tuberosum

<400> 42

```

Met Arg Gly Ser His His His His His His Gly Ile Leu Ala Glu Lys
1          5          10          15

Ser Ser Tyr Asn Ser Glu Phe Arg Pro Ser Thr Val Ala Ala Ser Gly
20          25          30

Lys Val Leu Val Pro Gly Thr Gln Ser Asp Ser Ser Ser Ser Ser Thr
35          40          45

Asn Gln Phe Glu Phe Thr Glu Thr Ser Pro Glu Asn Ser Pro Ala Ser
50          55          60

```

| | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Thr | Asp | Val | Asp | Ser | Ser | Thr | Met | Glu | His | Ala | Ser | Gln | Ile | Lys | Thr | 65 | 70 | 75 | 80 |
| Glu | Asn | Asp | Asp | Val | Glu | Pro | Ser | Ser | Asp | Leu | Thr | Gly | Ser | Val | Glu | 85 | 90 | 95 | |
| Glu | Leu | Asp | Phe | Ala | Ser | Ser | Leu | Gln | Leu | Gln | Glu | Gly | Gly | Lys | Leu | 100 | 105 | 110 | |
| Glu | Glu | Ser | Lys | Thr | Leu | Asn | Thr | Ser | Glu | Glu | Thr | Ile | Ile | Asp | Glu | 115 | 120 | 125 | |
| Ser | Asp | Arg | Ile | Arg | Glu | Arg | Gly | Ile | Pro | Pro | Pro | Gly | Leu | Gly | Gln | 130 | 135 | 140 | |
| Lys | Ile | Tyr | Glu | Ile | Asp | Pro | Leu | Leu | Thr | Asn | Tyr | Arg | Gln | His | Leu | 145 | 150 | 155 | 160 |
| Asp | Tyr | Arg | Tyr | Ser | Gln | Tyr | Lys | Lys | Leu | Arg | Glu | Ala | Ile | Asp | Lys | 165 | 170 | 175 | |
| Tyr | Glu | Gly | Gly | Leu | Glu | Ala | Phe | Ser | Arg | Gly | Tyr | Glu | Lys | Met | Gly | 180 | 185 | 190 | |
| Phe | Thr | Arg | Ser | Ala | Thr | Gly | Ile | Thr | Tyr | Arg | Glu | Trp | Ala | Pro | Gly | 195 | 200 | 205 | |
| Ala | Gln | Ser | Ala | Ala | Leu | Ile | Gly | Asp | Phe | Asn | Asn | Trp | Asp | Ala | Asn | 210 | 215 | 220 | |
| Ala | Asp | Ile | Met | Thr | Arg | Asn | Glu | Phe | Gly | Val | Trp | Glu | Ile | Phe | Leu | 225 | 230 | 235 | 240 |
| Pro | Asn | Asn | Val | Asp | Gly | Ser | Pro | Ala | Ile | Pro | His | Gly | Ser | Arg | Val | 245 | 250 | 255 | |
| Lys | Ile | Arg | Met | Asp | Thr | Pro | Ser | Gly | Val | Lys | Asp | Ser | Ile | Pro | Ala | 260 | 265 | 270 | |
| Trp | Ile | Asn | Tyr | Ser | Ser | Gln | Leu | Pro | Asp | Glu | Ile | Pro | Tyr | Asn | Gly | 275 | 280 | 285 | |
| Ile | Tyr | Tyr | Asp | Pro | Pro | Glu | Glu | Glu | Arg | Tyr | Ile | Phe | Gln | His | Pro | 290 | 295 | 300 | |
| Arg | Pro | Lys | Lys | Pro | Lys | Ser | Leu | Arg | Ile | Tyr | Glu | Ser | His | Ile | Gly | 305 | 310 | 315 | 320 |
| Met | Ser | Ser | Pro | Glu | Pro | Lys | Ile | Asn | Ser | Tyr | Val | Asn | Phe | Arg | Asp | 325 | 330 | 335 | |
| Glu | Val | Leu | Pro | Arg | Ile | Lys | Lys | Leu | Gly | Tyr | Asn | Ala | Val | Gln | Ile | 340 | 345 | 350 | |

| | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Ala | Ile | Gln | Glu | His | Ser | Tyr | Tyr | Ala | Ser | Phe | Gly | Tyr | His | Val | 355 | 360 | 365 | |
| Thr | Asn | Phe | Phe | Ala | Pro | Ser | Ser | Arg | Phe | Gly | Thr | Pro | Asp | Asp | Leu | 370 | 375 | 380 | |
| Lys | Ser | Leu | Ile | Asp | Lys | Ala | His | Glu | Leu | Gly | Ile | Val | Val | Leu | Met | 385 | 390 | 395 | 400 |
| Asp | Ile | Val | His | Ser | His | Ala | Ser | Asn | Asn | Thr | Leu | Asp | Gly | Leu | Asn | 405 | 410 | 415 | |
| Met | Phe | Asp | Gly | Thr | Asp | Ser | Cys | Tyr | Phe | His | Ser | Gly | Ala | Arg | Gly | 420 | 425 | 430 | |
| Tyr | His | Trp | Met | Trp | Asp | Ser | Arg | Leu | Phe | Asn | Tyr | Gly | Asn | Trp | Glu | 435 | 440 | 445 | |
| Val | Leu | Arg | Tyr | Leu | Leu | Ser | Asn | Ala | Arg | Trp | Trp | Leu | Asp | Glu | Phe | 450 | 455 | 460 | |
| Lys | Phe | Asp | Gly | Phe | Arg | Phe | Asp | Gly | Val | Thr | Ser | Met | Met | Tyr | Thr | 465 | 470 | 475 | 480 |
| His | His | Gly | Leu | Ser | Val | Gly | Phe | Thr | Gly | Asn | Tyr | Glu | Glu | Tyr | Phe | 485 | 490 | 495 | |
| Gly | Leu | Ala | Thr | Asp | Val | Asp | Ala | Val | Val | Tyr | Leu | Met | Leu | Val | Asn | 500 | 505 | 510 | |
| Asp | Leu | Ile | His | Gly | Leu | Phe | Pro | Asp | Ala | Ile | Thr | Ile | Gly | Glu | Asp | 515 | 520 | 525 | |
| Val | Ser | Gly | Met | Pro | Thr | Phe | Cys | Ile | Pro | Val | Gln | Asp | Gly | Gly | Val | 530 | 535 | 540 | |
| Gly | Phe | Asp | Tyr | Arg | Leu | His | Met | Ala | Ile | Ala | Asp | Lys | Trp | Ile | Glu | 545 | 550 | 555 | 560 |
| Leu | Leu | Lys | Lys | Arg | Asp | Glu | Asp | Trp | Arg | Val | Gly | Asp | Ile | Val | His | 565 | 570 | 575 | |
| Thr | Leu | Thr | Asn | Arg | Arg | Trp | Ser | Glu | Lys | Cys | Val | Ser | Tyr | Ala | Glu | 580 | 585 | 590 | |
| Ser | His | Asp | Gln | Ala | Leu | Val | Gly | Asp | Lys | Thr | Ile | Ala | Phe | Trp | Leu | 595 | 600 | 605 | |
| Met | Asp | Lys | Asp | Met | Tyr | Asp | Phe | Met | Ala | Leu | Asp | Arg | Pro | Pro | Thr | 610 | 615 | 620 | |
| Ser | Leu | Ile | Asp | Arg | Gly | Ile | Ala | Leu | His | Lys | Met | Ile | Arg | Leu | Val | 625 | 630 | 635 | 640 |

Thr Met Gly Leu Gly Gly Glu Gly Tyr Leu Asn Phe Met Gly Asn Glu
 645 650 655
 Phe Gly His Pro Glu Trp Ile Asp Phe Pro Arg Ala Glu Gln His Leu
 660 665 670
 Ser Asp Asp Ser Val Ile Pro Gly Asn Gln Phe Ser Tyr Asp Lys Cys
 675 680 685
 Arg Arg Arg Phe Asp Leu Gly Asp Ala Glu Tyr Leu Arg Tyr Arg Gly
 690 695 700
 Leu Gln Glu Phe Asp Arg Ala Met Gln Tyr Leu Glu Asp Lys Tyr Glu
 705 710 715 720
 Phe Met Thr Ser Glu His Gln Phe Ile Ser Arg Lys Asp Glu Gly Asp
 725 730 735
 Arg Met Ile Val Phe Glu Lys Gly Asn Leu Val Phe Val Phe Asn Phe
 740 745 750
 His Trp Thr Lys Ser Tyr Ser Asp Tyr Arg Ile Gly Cys Leu Lys Pro
 755 760 765
 Gly Lys Tyr Lys Val Ala Leu Asp Ser Asp Asp Pro Leu Phe Gly Gly
 770 775 780
 Phe Gly Arg Ile Asp His Asn Ala Glu Tyr Phe Thr Phe Glu Gly Trp
 785 790 795 800
 Tyr Asp Asp Arg Pro Arg Ser Ile Met Val Tyr Ala Pro Cys Arg Thr
 805 810 815
 Ala Val Val Tyr Ala Leu Val Asp Lys Glu Glu Glu Glu Glu Glu Glu
 820 825 830
 Glu Glu Glu Val Ala Val Val Glu Glu Val Val Val Glu Glu Glu
 835 840 845

<210> 43

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 43

Met Asn Lys Arg Ile Asp Leu

1

5